

Estd. : 1944

Research Magazine

June, 2022 - August, 2025



St. Xavier's College (Autonomous), Ranchi

Compiled by RDC, SXC Ranchi under the aegis of IQAC, SXC

Compiled by-

- ◆ Fr. Dr. Ajay Minj, S.J.- Director, RDC and Vice-Principal, St. Xavier's College, Ranchi
- ◆ Dr. Shiv Kumar- IQAC Coordinator, SXC, Ranchi
- ◆ Dr. Sandeep Chandra, Coordinator, RDC- SXC, Ranchi
- ◆ Dr. Sanjay Kumar Sinha- DSW, SXC, Ranchi
- ◆ Dr. Sushil Kumar Pandey- Assistant Professor, Dept of Chemistry, SXC, Ranchi
- ◆ Dr. Rajesh Kumar, Assistant Professor, Dept of Physics, SXC, Ranchi
- ◆ Shri Vijay Mehta- Assistant Professor, Dept of Mathematics, SXC, Ranchi
- ◆ Dr. Ananya Bose- Assistant Professor, Dept of English, SXC, Ranchi
- ◆ Dr. Pappu Mahto - Assistant Professor, Dept of Mathematics, SXC, Ranchi
- ◆ Dr. Reman Kumar Singh- Assistant Professor, Dept of Chemistry, SXC, Ranchi
- ◆ Dr. Somesh Sengupta- Assistant Professor, Dept of Geology, SXC, Ranchi

Words of Inspiration–



"Research is creating new knowledge."

— Neil Armstrong



The important thing is not to stop questioning. Curiosity has its own reason for existing."

— Albert Einstein



"The greatest enemy of knowledge is not ignorance, it is the illusion of knowledge."

— Stephen Hawking



"Dream, dream, dream. Dreams transform into thoughts and thoughts result in action."

— Dr. APJ Abdul Kalam



"Great ideas are born out of our willingness to challenge the status quo and venture into the unknown."

— C.V. Raman

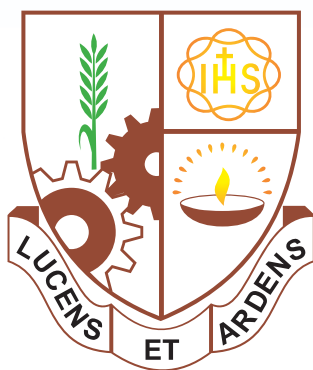


"Research is formalized curiosity. It is poking and prying with a purpose."

— Zora Neale Hurston

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ST. XAVIER'S COLLEGE

(An Autonomous College, Affiliated to Ranchi University, Ranchi)

DR. CAMIL BULCKE PATH, PURULIA ROAD, RANCHI - 834 001, JHARKHAND

E-Mail: sxcpincipal@gmail.com | Web. www.sxcran.org | www.sxcran.ac.in



Message

I am happy to learn that St. Xavier's College (Autonomous) Ranchi is going to launch a Research Magazine of the College to assist, encourage and support scientific research and writing among the faculty members of the College in various fields of their expertise and interest.

Any scientific research leads to new findings, establishes norms, sets new patterns, sheds new light, and evolves new understanding on the matters researched. It, therefore, aims at contributing something new to the world of research. It opens up new vistas and creates stimulus for newer ideas, hypotheses, analysis and conclusions, and establishes norms, laws and principles, offering human society something of value and service.

Providing new knowledge about something, affirming it and strengthening understanding of matters that concern nature and society are always welcome for the progress and benefit of human societies. Research helps improve the quality of life and culture, enhances appreciation and wonder at the progress in human knowledge, capacities and its depth and limits in applying the results of research in various fields that set a challenge to the human mind.

This new endeavour of the College to attract young researchers to delve into the world of research and awaken those wading through, to the rays of new light, will find an apt platform where they can shine and find intellectual satisfaction in their work. To all of them and to the team of this new endeavour, my sincere congratulations and best regards!

Rev. Fr. Sudhir Kumar Minj, S.J.

Rector, St. Xavier's College, Ranchi - 834001



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DR. CAMIL BULCKE PATH, PURULIA ROAD, RANCHI - 834 001, JHARKHAND

E-Mail: sxprincipal@gmail.com | Web: www.sxcran.org | www.sxcran.ac.in



Message

It is with great pride and genuine excitement that I present the first edition of the St. Xavier's College Research Magazine. The decision to launch this publication grew from a conviction: that research must be central to our institutional identity. Education without inquiry is incomplete; teaching without engagement in research risks stagnation. This magazine is the tangible expression of our commitment to integrate scholarship, pedagogy and social responsibility.

As Principal, I have long believed that a college's vitality is measured by its intellectual energy. We established this magazine to showcase that energy - to make visible the rigorous, creative and often painstaking work that faculty, students and staff undertake. The collection of abstracts, summaries and project overviews in this first issue demonstrates both the breadth and depth of scholarship flourishing within our campus. It represents topics that range from the theoretical to the applied, from local studies rooted in Jharkhand to contributions with wider relevance. That diversity is precisely what a modern academic institution needs. Research strengthens teaching in concrete ways. Faculty involved in research bring fresh perspectives and methods into the classroom; students engaged in research develop critical thinking, methodological skill and intellectual confidence. For the college, enhanced research productivity strengthens our academic profile, supports improved accreditation outcomes, and opens avenues for collaborations and funding. For the wider society, it provides evidence-based inputs for policy and community interventions. In short, research is both an internal good for educational quality and an external good for public life.

I offer my warm congratulations to the editorial team, the contributors and every member of the college community who has supported this endeavour. Let this magazine be both a celebration and a provocation - a celebration of work accomplished and a provocation to pursue higher standards of inquiry. May it inspire more students and faculty to step into research with curiosity, rigour and a sense of service.

With every good wish for fruitful reading and productive collaborations.

Rev. Fr. Dr. Robert Pradeep Kujur, S.J.
Principal, St. Xavier's College, Ranchi



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DR. CAMIL BULCKE PATH, PURULIA ROAD, RANCHI - 834 001, JHARKHAND

E-Mail: sxcpprincipal@gmail.com | Web. www.sxcran.org | www.sxcran.ac.in



Message

With the implementation of the National Education Policy (NEP) 2020, higher education institutions are reminded of their duty to embrace the research-centric vision and mission outlined in NEP 2020. This entails several components, such as the availability of research infrastructure, adequately trained faculty, and active student participation in research activities. In the context of India, and particularly in Jharkhand, this is a formidable challenge. The greater the challenge, the more robust the response must be from higher educational institutions to address this pressing issue.

St. Xavier's College, Ranchi, has undertaken various initiatives to strategically meet this call. I commend all the faculty members who have gone above and beyond to share the collective responsibility of transforming the institution into a hub of knowledge creation, contributing to sustainable development through research and innovation.

I extend my appreciation and congratulations to all members of the Research Development Cell for their initiatives in organizing the research day celebration and publishing the research magazine, particularly to foster research and innovation and to inspire all stakeholders to continue their tireless efforts both individually and collectively. I especially acknowledge the dedication and generous contributions of those faculty members who made publication of research magazine possible in such a short timeframe.

Rev Fr. Dr. Ajay Minj, S.J.
Vice-Principal, SXC, Ranchi



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Message

I am delighted that St. Xavier's College (Autonomous), Ranchi, is bringing out its first-ever Research Magazine with the noble objective of recognizing and promoting the research endeavours of our faculty members. Engaging in research not only enriches our academic journey but also enables us to discover new knowledge and perspectives, thereby keeping the spirit of learning alive throughout our careers.

In recent times, the University Grants Commission has laid strong emphasis on research, and the National Education Policy 2020 has further highlighted its integral role in the process of teaching and learning. This initiative of the Research Committee to publish a dedicated magazine is indeed a commendable step. I am confident that it will inspire both faculty and students to engage more actively in research, to write books, publish articles, and contribute meaningfully to the academic community.

Rev. Fr. Dr. Prabhat Kennedy Soreng, S.J.
Registrar, SXC, Ranchi



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Message

As we commemorate the birth anniversary (September 01, 1909) of the Padma Bhushan Rev. Fr. Dr. Camil Bulcke S.J., a stalwart in Hindi Literature as Research Day of St. Xavier's College, Ranchi. We honour his legacy by showcasing research and innovation and passion for knowledge creation.

This special edition of our research magazine showcases the outstanding work being done in the field of research in our institution.

The IQAC is committed to fostering a research culture that promotes excellence, integrity and impact. We are delighted to present the diverse range of Research topics and methodologies through this magazine.

I encourage all to continue pushing the boundaries of knowledge and exploring new frontiers and make meaningful contribution to the society.

Thank you to the editorial team and contributors for their hard work and dedication.

Wishing all researchers continued success and discovery.

Dr. Shiv Kumar

IQAC Coordinator,
St. Xavier's College, Ranchi – 834001

Research Ecosystem at St. Xavier's College, Ranchi

Research and Development Cell

St. Xavier's College (Autonomous), Ranchi

Research Advisory Committee (RAC)

Patron: Fr. Ajit Kumar Xess, S.J., Chairman, Governing Body, St. Xavier's College, Ranchi

Chairperson- Dr. Fr. Robert Pradeep Kujur, S.J., Principal, St. Xavier's College, Ranchi

Director, RDC- Dr. Fr. Ajay Minj, S.J., Vice-Principal, St. Xavier's College, Ranchi

Research and Development Cell (As per UGC guideline)-

Director- Dr. Fr. Ajay Minj, S.J., Vice-Principal, St. Xavier's College, Ranchi

Coordinator- Dr. Sandeep Chandra, Dept of Geography, SXC

1. Committee 1: Finance and Infrastructure

- a. **Fr. Ravi Hemant Kujur, S.J., Burser, Convenor**
- b. Dr. Raman Kumar Das, Dept of Mathematics
- c. Dr. Dhiraj M. Pathak, Dept of Economics
- d. Dr. Sandeep Kumar, Dept of Commerce

2. Committee 2: Research Program, Policy Development

- a. **Fr. Sanjay Kerketta, S.J., Dept of English, Convenor**
- b. Dr. Ajay Shrivastava, Dept of Botany
- c. Dr. Sanjay Sinha, Dept of History
- d. Dr. Sumit Kumar Roy, Dept of Physics
- e. Dr. Ananya Bose, Dept of English

3. Committee 3: Collaboration and Community Development

- a. **Dr. Rajeev Ranjan Shrivastava, Dept of Geography, Convenor**
- b. Dr. Priya Shrivastava, Dept of Zoology
- c. Dr. Rajesh Kumar, Dept of Physics
- d. Ms. Ivana Chakraborty, Dept of Sociology
- e. Dr. Somesh Sengupta, Dept of Geology

4. Committee 4: Product Development, Monitoring and Commercialization

- a. **Dr. Fr. Prabhat K. Soreng, S.J., Dept of Botany, Convenor**
- b. Dr. Ritesh Kr. Shukla, Dept of Zoology
- c. Dr. Sanyukta Kumar, Dept of Biotechnology
- d. Dr. Shiv Shankar Prasad, Dept of Biotechnology

5. Committee 5: IPR and Legal and Ethical Matters

- a. **Dr. Fr. Florence Purty, S.J., Dept of Education, Convenor**
- b. Dr. Shiv Kumar, Coordinator, IQAC, SXC
- c. Dr. Sushil Kumar Pandey, Dept of Chemistry
- d. Dr. Ashutosh Pandey, Dept of Political Science
- e. Mr. Vijay Kr. Mehta, Dept of Mathematics

RESEARCH POLICY OF THE COLLEGE

St. Xavier's College, Ranchi strongly believes in the value of 'Magis'-a challenge to do more and strive for excellence. Striving continuously towards this motive, the institution has persistently endeavored to achieve academic excellence in teaching and research by encouraging "inquisitive" and "futuristic" mindset in both teachers and students. The college emphasize on creating a research-based ecosystem-where facts powered with novel thoughts can lead to a conscious and responsive society.

Objectives of the Research Policy

- i. To build up an exuberant research culture among the faculty members, students and research scholars working under the guidance of a faculty members of SXC, Ranchi.
- ii. To develop a support structure to facilitate research activities
- iii. To motivate and encourage both teachers and students for publications in quality journal indexed by Scopus/Web of Science, having impact factor
- iv. To promote collaborations nationally and globally to carry out interdisciplinary research work with other research institutes/industries/academia etc.
- v. To establish standards and norms for ensuring ethical conduct in research
- vi. To design a plan/flowchart to promote continuous research work for faculty, scholars and students in the college

Scope of the Research Policy

This policy will be applicable to:

- i. All staff, who are appointed on sanctioned post as well as those appointed by the college management on permanent basis and are engaged in active teaching, research or administration.
- ii. All students studying in the college
- iii. All researchers/ research scholars associated with college/college staff

The research agenda at SXC focuses on two fronts, namely individual and departmental

- i. Faculty members and students are encouraged to take up research individually as well as jointly.
- ii. All faculty members/researchers/students are encouraged to work on contemporary issues relevant to the society at large.

Research Facilities/ Centers

The College has established five dedicated Research Centres to carry out research and publication in Basic and Applied Sciences, Social Sciences, Humanities, Commerce, Management and Tribal languages etc. These Research Centres are-

- i. **Central Research Laboratory (CRL)**
- ii. **Xavier Research Centre**
- iii. **Camil Bulcke Research Centre**
- iv. **Tribal Research Centre**
- v. **Society for Earth Observation and Conservation (SEOC)**

Apart from above five research centres all PG departments are recognized as Research Centres. Departmental Research Centres are encouraged to engage students in quality research work.

Central Research Laboratory (CRL)-

The college established a Central Research Laboratory (CRL) in 2010 to enable the faculty and students to achieve excellence in multidisciplinary research with societal/industrial relevance. Fr. C. De Brouwer s.j., a legendary personality of the college management, played the pivotal role in the establishment of the said lab. The modern analytical instruments present in this lab offer a wide range of analytical methods/ techniques for material testing and characterization. This consequently helps researchers to publish their research findings in peer reviewed indexed journals.

This facility is extensively used by the faculty members and doctoral research scholars. Also, the students of science fraternity (undergraduate and post graduate) use the lab extensively to carry out research projects which is a mandatory part of the course curriculum. The facility is also extended to students of external organizations mainly academic institutions in the region. The CRL provides facilities and assistance in sample preparation to the users. It carries out analysis of samples received from students, faculty members and other researchers.

Xavier Research Centre-

Xavier resource Centre was set up in the year 2002 under the aegis of St. Xavier's College, Ranchi, under the leadership of the then Principal. Dr. Fr. Nicholas Tete, S.J. The idea was to develop the centre as a nodal wing of the college in respect of research and extension activities with regard to 4 major thrust areas and namely-

- Tribal Development
- Rural Management
- Human Rights
- Gender Problems

This research centre publishes a journal called Xavier Research Journal, which is specifically designated to disseminate information pertaining to the problems and issues faced by the tribal brethren living in Jharkhand and other contiguous areas of India. The journal was discontinued for some years, but the centre is working towards reviving the Xavier Research Journal for publishing its research activities.

The centre provides a sitting capacity for about 10 researchers. Besides being equipped with several books, it also gives access to desktop computers for scholars to conduct their research. The centre has a wide range of books on tribal issues and development. It provides a conducive research environment for those coming from the field of social sciences. Xavier Research Centre also takes care of all types of publications of the institution.

Camil Bulcke Research Centre-

The college has dedicated research for Hindi language in memory of one of India's most renowned Hindi scholars, Dr. Fr. Camil Bulcke, a Belgian Jesuit missionary in India. The centre came into existence since 1st July, 2017. Professors of Hindi, teaching in any College or retired are welcome to become members. The research centre has a total of about 14000 books, encyclopedias, dictionaries, books on Hinduism- the Vedas, the Ramayana, the Mahabharata, the Upanishads, the Brahmanas, the Bhagavad Gita and so on. Books on different religions - Christianity, Islam, Buddhism, Sikhism, Jainism and works of great poets like - Surdas, Tulsidas, Jayasi, Meerabai etc are also present in the centre. The centre has computers, fully air conditioned seating area, Ricoh xerox machine, Voltas filter water, CCTV surveillance, attached wash

room, parking space in college campus. The library software KOHA is used to keep account of the books and magazines. Two librarians work at the centre.

Tribal Research Centre (TRC)-

To sustain and nurture the rich the heritage of local tribes of the state the college has also established the Tribal Research Centre. Scholars from the local region are promoted to enrich the literature regarding regional and tribal languages. Tribal Research Centre is a private enterprise established in 2017. It works on the promotion of 5 tribal languages: Mundari, Santhali, Kurukh, Kharia and Ho. These are also called Adivasi / Indigenous People's languages. Here, the word "tribe" is used to mean the Adivasi / Indigenous Peoples languages mostly spoken in central India. Following are the overall aims and objectives of the TRC for the promotion of tribal languages and cultures as far as practicable and in collaboration with persons, institutions and organizations on the similar objectives:

1. To engage in research on tribal languages and cultures as well as viz. Mundari, Santhali, Kurukh, Kharia and Ho languages and publish the findings and outcome;
2. To publish 2 magazines annually in each of the five tribal / adivasi / indigenous people's languages including the wall calendar for the promotion of these languages;
3. To put the oral tribal literature in written form for record and learning;
4. To publish important old manuscripts on tribal matters that are on the verge of being lost;
5. To collect and publish the vanishing tribal folklores, proverbs, riddles and anecdotes including songs and customary practices;
6. To engage in research on tribal matters and issues relating to their knowledge systems, health and medicinal practices, governance and administration, livelihood patterns and ecology and sustainability of life to mention a few-

Society for Earth Observation and Conservation (SEOC)-

SEOC is a multidisciplinary research centre which was founded on 10th March, 2022, with the motto to promote a multidisciplinary approach to observe, address, understand, tackle, create awareness about and provide suitable remedial measures for the environmental issues and challenges leading to the conservation of earth resources.

For this the faculties/ researchers of different streams like Geography, Botany, Zoology, Biotechnology, Chemistry, Geology, Mathematics, Statistics have joined to foster a multidisciplinary research to save the three pillars of the sustainable development the environment, the economy and the society.

The college thus provides basic infrastructural facilities to research scholars and supervisors for successfully carrying out their research work.

Code of Research Ethics:

The policy frame work strictly states that all kinds of research undertaken within the campus must be conducted in accordance with the vision and mission of the institution, the guidelines issued by Ranchi University, and in compliance with the UGC guidelines. The institution insists on originality in research and advocates caution against plagiarism and any other form of malpractice. Through code of research ethics, the institution aims to protect and recognize the basic rights of the researcher and ensures academic freedom and high-quality research outcome.

Ethical Guidelines to Check Malpractice in Research

St. Xavier's College, Ranchi is committed to produce and promote quality research by adopting an effective mechanism for checking plagiarism and unethical practices. The guidelines issued to discourage plagiarism in research are in line with the UGC regulations given for promoting academic integrity and prevention of plagiarism in higher educational institutions, dated 23rd July, 2018 F.1-18/2010(CPP-II).

The college possess the licensed version of worldwide accepted Turnitin plagiarism check software (<https://sxcran.turnitin.com/home/sign-in>) to ensure the originality of the research work. The supervisors are responsible for high standard research conduct in the respective thesis/dissertation submitted by their students.

Support by the Organization

- i. Faculty members are encouraged to attend workshops and training programs. For those presenting quality research papers at conferences, the institute covers the conference registration fees and travel expenses.
 - ii. Departments are encouraged to organize Faculty Development Programs (FDP), workshops, and training sessions. The organization readily provides the necessary infrastructure and manpower. Additionally, the college management offers financial assistance to ensure the successful execution of these events.
 - iii. The institution provides seed money to fund potential research projects. Faculty can apply for this funding using the designated format and submit their proposals to the college's Research Development Committee (RDC). After evaluating the proposals, the RDC will disburse the approved amount to the principal investigator.
 - iv. The institution provides financial assistance for successful Patent registration.
 - v. The college celebrates Research Day to develop research ecosystem and motivate researchers by providing cash incentives and certificate of appreciation by college management. Based on the recommendation of the Research and Development Cell and approval of the Principal, every year Best Researcher Award (SXC Best Researcher of the Year) will be awarded to teachers for exemplary research work and publication.
 - vi. The institution provides financial assistance for Research Papers in Peer- Reviewed or UGC listed Journals, Publications (other than Research papers)
- (a) Books authored which are published by:
- International publishers
 - National Publishers
 - Chapter in Edited Book
 - Editor of Book by International Publisher
 - Editor of Book by National Publisher
- (b) Translation works in Indian and Foreign Languages by qualified faculties
- Chapter or Research paper
 - Book
- (c) - Research publications as proceedings/ short communication etc.

Research Centers of the College

1. Central Research Laboratory (CRL)
2. Xavier Research Centre
3. Camil Bulcke Research Centre
4. Tribal Research Centre
5. Society for Earth Observation and Conservation (SEOC)
6. Post Graduate Research centers of the college-
 - a. Research Center, Dept of History
 - b. Research Center, Dept of Political Science
 - c. Research Center, Dept of Economics
 - d. Research Center, Dept of Hindi
 - e. Research Center, Dept of English
 - f. Research Center, Dept of Commerce
 - g. Research Center, Dept of Zoology
 - h. Research Center, Dept of Botany
 - i. Research Center, Dept of Chemistry
 - j. Research Center, Dept of Geology
 - k. Research Center, Dept of Geography

IQAC- RDC initiatives/ Activities Organized to Foster the culture of Research in college campus-

- **College procured plagiarism test software- Turnitin Originality and Turnitin Authorship** - Comprehensive protection against copy/paste plagiarism, student collusion, and contract cheating, Authorship Verification; Evidence Collection; Workflow & API Turnitin with 1500 user licences. Payment date- 9th April, 2023
- College adopted and implemented **Research policy of the college** on 25th July 2024.
- IQAC- SXC, Ranchi organised one-day workshop on- **Research Ethics in collaboration with Turnitin** on 19th December, 2024 in Proost Hall, SXC. Mr. Milan Mandal, Coordinator-East of Turnitin share the key features of Turnitin. Faculty members the college and their research scholars attended the workshop.
- Seed Money was granted to 11 faculty members of the college to initiate research projects in different fields.



List of Faculty Members received Seed Money for 2024-25

Sl No	Name of the Faculty/ Researcher (PI/Co-PI)	Department	Topic
1	Dr. Sanyukta Kumar (PI)	Biotechnology	Study of fermentation of traditional rice beverage “Handia” in Ranchi and adjoining districts.
2	Dr. Manoj Kumar (PI) Dr. Bharti Singh Raipat Dr. Rakesh Ranjan	Zoology	Morphomolecular identification of butterflies of Ranchi (Jharkhand)
3	Dr. Ravi Kumar B (PI)	Physics	Optical techniques for surface and thin film characterization
4	Dr. Mitesh Chakraborty (PI)	Physics	Study of some rare-earth doped phosphors for LED, display devices and anti-counterfeit applications
5	Dr. Shiv Shankar Prasad (PI)	Biotechnology	Characterization of microbial products or degradation
6	Dr. Reman Kumar Singh (PI)	Chemistry	Effect of metal oxide nanoparticles on the stability of neurodegenerative disease-causing proteins, such as the prion protein
7	Dr. Priya Shrivastava (PI)	Zoology	Effect of catechin-coated dialdehyde cellulose on the treatment of atherosclerotic lesions in the albino rat.
8	Anju Oseema Maria Toppo (PI)	History	Decolonizing history writing through cartoons: Of making indigenous heroes and indigenous stories
9	Dr. Ritesh Kumar Shukla	Zoology	Effect of Feeding and Non-feeding on Fish Gut Health: An Vital Aspect in Aquaculture Practices
10	Dr. Rajesh Kumar	Physics	Surface Topography of 2D and 3D Surfaces using Optical Methods
11	Dr. Sumit Kumar Roy	Physics	Synthesis and Characterization of Novel Double Pervskite based Ceramics

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INTRODUCTION

Higher education in India has evolved through several distinct phases, including the ancient gurukul system, the monastery system, the madrasa system, the modern English system of education, and the post-independence system. Each phase is characterized by its own principles and pedagogy, tailored to meet the needs of its time. Throughout these phases, the underlying goal of higher education has consistently been to equip individuals with the skills necessary to be valuable contributors to society's demands at the given time and place. The aim has always been to link teaching and learning experiences with practical applications. The National Education Policy 2020 has been introduced to enhance and make these educational approaches more effective and aligned with the objectives of making India both employable and self-reliant. To achieve this, NEP 2020 emphasizes transforming Indian higher education institutions into centers of knowledge creation, rather than merely focusing on knowledge dissemination.

St. Xavier's College, Ranchi, has encountered several challenges in implementing NEP 2020, with one of the most daunting being the alignment with its research-centric vision and mission. Nevertheless, the institution, supported by all stakeholders, has consistently strived to address this challenge. All stakeholders, especially the teaching faculty, are encouraged to tackle this pressing issue by integrating their research with the teaching-learning experience. Additionally, various initiatives have been launched to foster research activities and establish a viable research ecosystem. One such initiative is the celebration of Research Day. This event is introduced to promote research activities and inspire teaching faculty to engage in research publication, supervise doctoral studies, and contribute to knowledge creation. On this day, the institution recognizes and applauds the research efforts of its teaching faculty, and all researchers celebrate each other's initiatives and dedication. Building on this celebration, the concept of documenting all research records has materialized in the form of this research magazine. This magazine chronicles the creative efforts and hard work of teaching faculty since June 2022, serving as a source of motivation for future research endeavours.

To commemorate this initiative and celebration, September 1st was specifically chosen to honor the esteemed legacy of Dr. Fr. Camil Bulcke SJ, a distinguished researcher and renowned Hindi scholar. He served at this prestigious institution from 1950 to 1977 and was honored with the Padma Bhushan by the Government of India in 1974 for his significant contributions to Hindi literature and language. The institution takes pride in such an eminent figure and aspires to follow in the footsteps of this inspirational individual, especially in the fields of research and scholarship.

This is a small initiative to promote one of the crucial components of higher education. However, the institution believes that the small seed planted this year will slowly grow and become a big tree in the coming years. With this confidence, faculty members, particularly those who worked extra hours, firmly believe that dreams, achievements, and success do not come true through magic; they take sweat, determination, and hard work. The institution, with the support of committed faculty members, continues to work with the hope that collaborative efforts and initiatives by all stakeholders will bear fruit as and when the time comes.

25.08.2025

Fr. Dr. Ajay Minj, S.J.
Director, RDC



Commerce

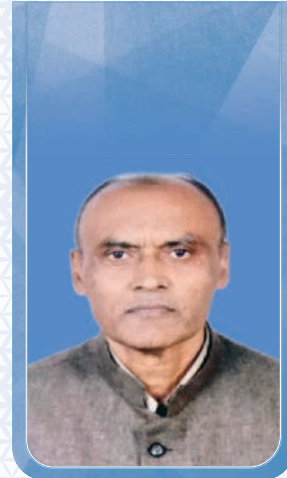


Name of the Faculty/Researcher - Dr. Narendra Singh

Department of Commerce

Email- narendrasingh.597@gmail.com

- Total Number of Research papers published- 04
- No. of Books- 01



Research Article - 01

Ankit Kumar Agarwal, Dr. Narendra Singh, Ajay Kumar; HRD Interventions Address Employee Challenges In Large-Scale Enterprises, IJCRT | Volume 13, Issue 2 February 2025 | ISSN: 2320-2882.

HRD Interventions Address Employee Challenges In Large-Scale Enterprises

Ankit Kumar Agarwal¹, Dr. Narendra Singh², Ajay Kumar³

1. University Department of Commerce and Business Management, Ranchi University, Ranchi
2. Department of Commerce, St. Xavier's College, Ranchi
3. University Department of Commerce and Business Management, Ranchi University, Ranchi

Abstract

This study evaluates the effectiveness of Human Resource Development (HRD) interventions in addressing critical challenges in large-scale enterprises, including skill gaps, disengagement, high turnover, and resistance to change. Using a mixed-method approach, data were collected from 500 employees across 10 enterprises and 20 HR managers. Statistical tools, including regression analysis, ANOVA, and correlation analysis, revealed that targeted HRD strategies significantly improve employee outcomes. Training and development programs showed the strongest positive correlation with job satisfaction and skill enhancement ($r = 0.75$, $p < 0.01$), while performance management systems and engagement initiatives reduced disengagement and turnover rates. The findings highlight the importance of customized HRD practices aligned with organizational goals, recommending ongoing training, robust performance systems, career progression paths, and regular engagement monitoring. These interventions foster a motivated and skilled workforce, driving organizational success. Future research should explore sector-specific HRD practices and their long-term impacts.

Keywords- HRD Interventions, Employee Challenges, Large-Scale Enterprises, Employee Retention, Skill Enhancement

Research Article - 02

Do High P/E Stocks Outperform?

Evidence from Sectoral and Time-Horizon Analysis in the Nifty 50

Ajay Kumar ^{a*} and Narendra Singh^b

^{a*} University Department of Commerce and Business Management, Ranchi University, Ranchi, India.

^b St. Xavier's College, Ranchi, India.

Asian Journal of Economics, Business and Accounting

Volume 25, Issue 5, Page 425-434, 2025; Article no.AJEBA.135761, ISSN: 2456-639X

DOI: <https://doi.org/10.9734/ajebe/2025/v25i51812>

Received: 10/03/2025, Accepted: 12/05/2025, Published: 22/05/2025

Abstract

Aims: This study aims to re-evaluate the traditional belief that stocks with high Price-to-Earnings (P/E) ratios are likely to underperform due to overvaluation. Specifically, it investigates the relationship between P/E ratios and stock performance over different time horizons within the Nifty 50 index.

Background: The Price-to-Earnings (P/E) ratio is one of the most widely used and fundamental valuation metrics in equity markets, serving as a key indicator for investors to assess whether a stock is overvalued or undervalued. High P/E stocks often exhibit higher volatility, making them riskier investments.

Methodology: The research employs quantitative methods including correlation analysis, regression analysis, analysis of variance (ANOVA), and standard deviation measures to assess volatility. The study focuses on high P/E stocks within the Nifty 50, a benchmark index representing India's most prominent and liquid companies.

Findings: The results indicate that P/E ratios exhibit weak predictive power for short-term stock performance. However, over longer investment horizons, high P/E stocks—particularly in growth-oriented sectors such as Information Technology and Fast-Moving Consumer Goods (FMCG)—demonstrate superior returns. The analysis also highlights the role of sectoral differences in influencing the performance of high P/E stocks.

Conclusion and Practical implications: The findings provide actionable insights for investors, fund managers, and policymakers by suggesting that long-term investments in high P/E stocks from specific sectors can yield favourable outcomes. Sector-specific analysis should be integrated into investment decision-making frameworks to enhance portfolio performance.

Keywords: *High P/E ratio stocks; nifty 50 index; stock performance; sectoral analysis; investment strategy.*

Research Article - 03

Measuring Key Problems of PPP Model for Development of Infrastructure in India

Narendra Singh – Associate Professor, Department of Commerce, St. Xavier's College, Ranchi

Amita Tibrewal – Research Scholar, Department of Commerce, Ranchi University, Ranchi

- **Journal Name :** Resonance: National Journal of Value Education
- **ISSN:** 2320-7116, **Volume/Issue:** Vol. 11.1 (January, 2023)
- **Publisher:** Truecare Research & Development (Regd. under Societies Reg Act-21 (1860) No. 756)
- **Indexing & Impact Factor:** 3.9 (2023–24), **Type:** Bilingual (English/Hindi), Half Yearly, Peer Reviewed, Referred Journal

Abstract

A necessary condition for achieving broad-based and inclusive growth on a sustained basis is the availability of high-quality infrastructure. Infrastructure is also essential for productivity and export competitiveness. The Government of India (GoI) promotes Public Private Partnership (PPP) as a tool to bring private sector efficiency into developing infrastructure assets and delivering high-quality public services. As a result of institutional and legislative measures, India has emerged as one of the world's top PPP markets.

This paper analyses secondary data (e.g., delays in PPP vs. other projects, completion status across development modes) and primary data from 350 respondents. It concludes that the PPP model plays a significant role in infrastructure development in India while identifying the key variables that create challenges for its success.

Keywords- PPP, Advantages, Stakeholder's Approach, India

Research article - 04

Shweta Kumari, Dr. Narendra Singh; FDI and FPI in Post-Pandemic India: A Recovery Perspective, International Journal for Research in Applied Science & Engineering Technology (IJRASET), Value: 45.98, ISSN: 2321-9653;

FDI and FPI in Post-Pandemic India: A Recovery Perspective

Shweta Kumari¹, Dr. Narendra Singh²

1. University Department of Commerce and Business Management, Ranchi University, Ranchi
2. Department of Commerce, St. Xavier's College, Ranchi

Abstract

The COVID-19 pandemic has been disrupted global economic activities at an unprecedented scale, significantly it has affected cross-border investment flows. India, like many other emerging economies, experienced substantial volatility in both Foreign Direct Investment (FDI) and Foreign Portfolio Investment (FPI). This paper explores the impact of the pandemic on FDI and FPI inflows in Indian economy and evaluates the effectiveness of the government's recovery strategies in stabilizing and revitalizing foreign investments during the post-pandemic period. The study integrates quantitative time-series analysis of FDI and FPI data from 2017 to 2023. Quantitative data sourced from the Reserve Bank of India (RBI), Ministry of Finance, and SEBI reveals a sharp contraction in FDI and FPI inflows in 2020 due to investor uncertainty, lockdowns, and supply chain disruptions. However, a recovery trend has been observed post-2021, particularly in sectors such as digital services, healthcare, renewable energy, and fintech. Thematic analysis of qualitative data highlight that while investor sentiment was initially cautious, transparency in policy, macroeconomic stability, and targeted incentives encouraged a resurgence in long-term FDI. FPI inflows, being more volatile, responded quickly to global monetary policies and domestic reforms. This paper contributes to the broader discourse on investment resilience in crisis contexts. It highlights sector-specific trends, policy effectiveness, and offers actionable recommendations to strengthen India's position as an attractive and stable destination for foreign capital in the evolving post-pandemic global economy.

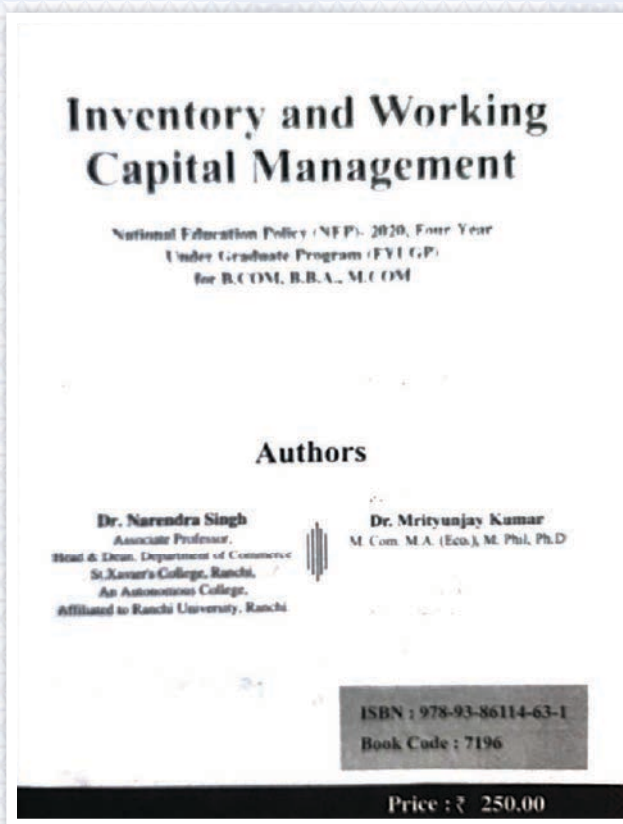
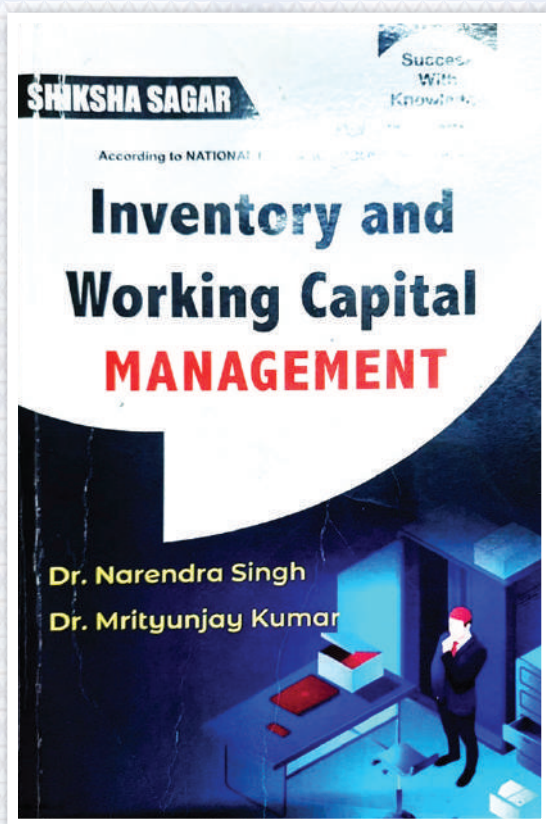
Keywords- HRD Interventions, Employee Challenges, Large-Scale Enterprises, Employee Retention, Skill Enhancement

Book Details

Title: Inventory and Working Capital Management

- Dr. Narendra Singh – Associate Professor, Head & Dean, Department of Commerce, St. Xavier's College, Ranchi (An Autonomous College affiliated to Ranchi University, Ranchi)
- Dr. Mrityunjay Kumar – M.Com, M.A (Eco.), M.Phil, Ph.D

Publisher/Series: Shiksha Sagar (as seen on the cover), **ISBN:** 978-93-86114-63-1, **Book Code:** 7196



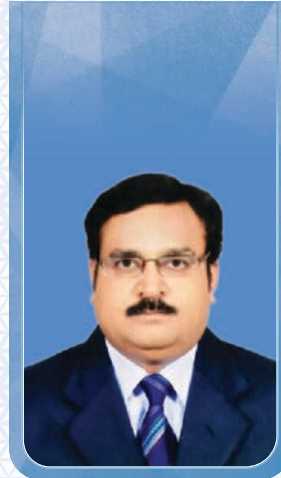
Ph.D. Supervision

Sl No	Name of Research Scholar	Date of Registration	Topic of Ph.D.	Status
1	Sneha Deepika Soreng		Evaluation of Economic Development for Rural Poor Population Living Five Year Plan - A Case Study of Ranchi district	Completed
2	Amita Tibrewal		Problems and Prospects of PPP mode in infrastructure development in India - A case study of Roadways	Completed
3	Pradeep Kumar Jaluka		Merger of 10 Public Sector Banks in 2020: Its impact on Banking Sector and Indian Economy	Completed
4	Ajeet Kumar Kulgandi		A study of Government development programmes and Schemes of Rural Development of Jharkhand - A case study of Ranchi district	Completed
5	Ankit Kumar Agarwal	07.10.23	A study of Human Resource development Intervention - A comparative Study of Tata Steel and Bokaro Steel Limited	Ongoing
6	Reetika Singh	06.10.23	A critical Study of technological innovation in Banking Sector and its impact on customer Satisfaction. A case study of Ranchi district	Ongoing
7	Shawata Kumari	16.10.23	A critical evaluation of Foreign direct Investment and Foreign Portfolio Investment on Indian Economy	Ongoing

Dr. Sandeep Kumar

Assistant Professor, Department of Commerce,

St Xavier's College, Ranchi



No. of Research Articles –02

No. of Book - 01

Journal – SHODH PRABHA, January-March 2023, ISSN – 0974-8946

Topic - COVID19 Pandemic: A curse for small scale businesses albeit a blessing for sustainability of businesses

Authors: Dr. Sandeep Kumar and Dr. Fr. Robert Peter Kujur S.J.

Abstract:

Time and again business firms face numerous threats and opportunities and continuously face challenges due to changes in government policies, consumer behaviour, technological changes, and ever-growing competition. Medium and large-scale businesses in India have been able to demonstrate growth through business model changes, adopting new pricing strategies, adopting new leadership models, going for digitalization and so on. Cash reserve and ability to pump adequate working capital by these firms help them to revamp to cater to markets' demands of new products or services at premium prices. In the end, many mini and micro businesses (primarily sole proprietorships) who cannot afford to invest in infrastructural enhancement will vanish. This can cause significant unemployment and widen the gap of economical class in India.

Keywords: *Small Scale Business, COVID 19, GST Revenue Growth, Business Transformation, Digitalization of Business*

Research Articles –02

Journal - INTERNATIONAL JOURNAL FOR RESEARCH PUBLICATION & SEMINAR, ISSN: 2278-6848 | **Volume:** 14 **Issue:** 05 | October - December 2023

Authors – Dr. Jyoti Ignace Tete and Dr. Sandeep Kumar

Topic - EMERGING TRENDS IN WOMEN ENTREPRENEURSHIP IN JHARKHAND

Abstract:

Women in Jharkhand are changing and showing up more often as potential entrepreneurs. There is a growing trend of women entering the business world with the intention of launching small and medium-sized businesses. They have work experiences of other women and role models to draw inspiration from. Women's underlying entrepreneurial potential has gradually changed as a result of a growing knowledge of the role and status of economic society. A woman's rise in the business sector was mostly influenced by her aptitude, experience, and financial flexibility. Recent advances in women's entrepreneurship indicate a shift in the number of women pursuing formal business in the Indian state of Jharkhand. Despite these developments, women entrepreneurs continue to face barriers such as a lack of funding, poor infrastructure, gender stereotypes, and insufficient skills. By creating an environment that supports female entrepreneurs, Jharkhand may use their full potential to advance social and economic development that is inclusive. The report offers suggestions on how to address these problems, emphasizing the value of financial inclusion, gender awareness, talent development, and infrastructure development.

Keywords: Women entrepreneurship, transformation, financial adaptability, ecosystem.

Ph.D. Supervision

Sl No	Name of Research Scholar	Date of Registration	Topic of Ph.D.	Status
1	Dr. Jyoti Ignace Tete	-	Entrepreneurial activities in Jharkhand during Liberalisation – A case study of Ranchi District	Completed December 2024

Book published –

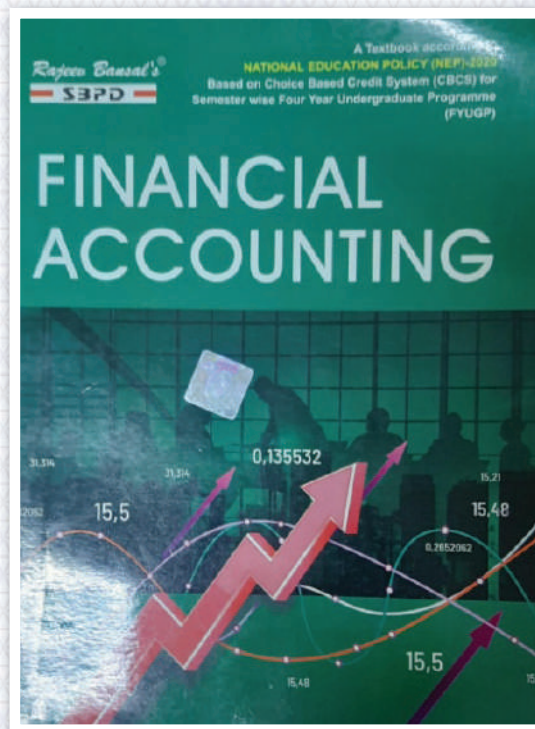
1. Titled “Financial Accounting”, Publisher – SBPD Publication, Agra, ISBN 978-93-95958-05-9, 2025.

(1) International Conference

Presented paper in International Conference – Topic - COVID19 Pandemic: A curse for small scale businesses albeit a blessing for sustainability of businesses at University of Economics, Katowice, Poland, 1-2 June, 2022

(2) Refresher Courses/ Short term courses

(1) Participated in Inter/ Multi-Disciplinary Refresher Course in Research Methodology and Statistical Analysis at UGC MMTC, Ranchi University from 24.06.2025 to 07.07.2025





Name of the Faculty- Fr. Dr. Robert Pradeep Kujur, S.J.

Assistant Professor

Department of Commerce

Email-robortpradeepkujur@gmail.com

- **Total number of research articles during the period- 06**
- **Total number of Ph.D. registrations – 02 Ongoing**

Research paper - 01

Dr. Sandeep Kumar and Dr. Fr. Robert Pradeep Kujur S.J.; COVID-19 Pandemic: A curse for small-scale businesses albeit a blessing for sustainability of businesses, January-March 2023, ISSN – 0974-8946

Abstract:

Time and again business firms face numerous threats and opportunities and continuously face challenges due to changes in government policies, consumer behaviour, technological changes, and ever-growing competition. Medium and large-scale businesses in India have been able to demonstrate growth through business model changes, adopting new pricing strategies, adopting new leadership models, going for digitalization and so on. Cash reserve and ability to pump adequate working capital by these firms help them to revamp to cater to markets' demands of new products or services at premium prices. In the end, many mini and micro businesses (primarily sole proprietorships) who cannot afford to invest in infrastructural enhancement will vanish. This can cause significant unemployment and widen the gap of economical class in India.

Keywords: *Small Scale Business, COVID 19, GST Revenue Growth, Business Transformation, Digitalization of Business*

Research paper - 02

Fr. Dr. Robert Pradeep Kujur S. J, Ajit Kumar Melgandi, "Socio-Economic Transformation of Tribal Communities through Government Schemes in Ranchi District", International Journal of Research and Analytical Reviews, August 2025, Volume 12, Issue 3 [eISSN: 2584-2854], pp 3446-3450 (Published: 2024-12-05) DOI: <https://doi.org/10.47392/IRJAEM.2024.0508>

Abstract:

This research explores the socio-economic transformation of tribal communities in Ranchi district, Jharkhand, brought about by various government welfare schemes. The study aims to evaluate the impact of initiatives such as the Pradhan Mantri Awas Yojana (PMAY), MGNREGA, Tribal Sub-Plan (TSP), and education and health schemes tailored for Scheduled Tribes. Using a mixed-method approach, the study combines field surveys, interviews, and secondary data analysis to assess changes in income levels, education attainment, health outcomes, housing conditions, and employment opportunities among tribal households. The findings reveal that while significant progress has been made in improving living standards and access to basic amenities, challenges such as bureaucratic hurdles, lack of awareness, and irregular implementation still hinder the full potential of these programs. The study concludes with policy recommendations to enhance the inclusiveness, reach, and effectiveness of development interventions aimed at tribal upliftment.

Keywords - *Tribal communities, Government Schemes, socio – economic, Scheduled Tribes, living standards.*

Research paper - 03

A STUDY ON THE NEED AND BENEFIT OF VOCATIONAL PROGRAMMES AT UNDERGRADUATE LEVEL – BRIDGING GAP BETWEEN STUDENTS AND WORKPLACE – A STUDENTS PERSPECTIVE

Dr. Fr. Robert Pradeep Kujur s.j.¹ Dr. Shakil Anwar Siddique²

Abstract:

In the present era the students want to earn just after the completion of their basic education, so there is a much need of professional courses that helps the students to attain this goal. Students who receive vocational education gain practical, useful skills that they can apply immediately upon graduation and throughout their program.

Through vocational education schools and programmes, there are numerous industry and career opportunities available. The National Center for Educational Statistics reports that the various sectors/domain like finance, marketing, retail, banking, insurance, office administration, construction, and consumer services are the most sought-after professions.

Strong job markets and professional development, a wide range of possibilities for vocational programmes/courses, and investment value are the three primary categories of the advantages of a vocational education. With the equipped knowledge in the required field the student can get placed just after the completion of undergraduate programme. The course curriculum of vocational programme is designed in such a way that it acts as a bridge between the student and the industry.

This paper tries to lead focus on the need and benefit of professional/vocational programmes that really helps the students in getting the job also a hand on experience that helps them in the workplace.

Research paper - 04

Socio-Economic Transformation of Tribal Communities through Government Schemes in Ranchi District

1. Fr. Dr. Robert Pradeep Kujur S. J, 2. Ajit Kumar Melgandi

1 St. Xavier's College Ranchi, Ranchi, India

Abstract:

This research explores the socio-economic transformation of tribal communities in Ranchi district, Jharkhand, brought about by various government welfare schemes. The study aims to evaluate the impact of initiatives such as the Pradhan Mantri Awas Yojana (PMAY), MGNREGA, Tribal Sub-Plan (TSP), and education and health schemes tailored for Scheduled Tribes. Using a mixed-method approach, the study combines field surveys, interviews, and secondary data analysis to assess changes in income levels, education attainment, health outcomes, housing conditions, and employment opportunities among tribal households. The findings reveal that while significant progress has been made in improving living standards and access to basic amenities, challenges such as bureaucratic hurdles, lack of awareness, and irregular implementation still hinder the full potential of these programs. The study concludes with policy recommendations to enhance the inclusiveness, reach, and effectiveness of development interventions aimed at tribal upliftment.

Index Terms - Tribal communities, Government Schemes, socio-economic, Scheduled Tribes, living standards.

Research paper - 05

IMPACT OF SOCIAL MEDIA MARKETING ON CONSUMER BUYING BEHAVIOR WITH REFERENCE TO RANCHI

Rev. Fr. Dr. Robert Pradeep Kujur s.j.¹, Dr. Shakil Anwar Siddique²

St. Xavier's College, Ranchi

Abstract

The paper analyzes buying behavior of consumers, especially students, towards social media marketing in Ranchi, Jharkhand, India. It investigates the function of social media in consumer decision-making. A quantitative study explores the extent to which social media use affects experiences. Outsiders increasingly dominate consumer opinions in developed spaces, affecting judgments. Customers are more engaged with online social networking since advertisers have no control over content, timing, or frequency of customer conversations. Findings indicate that consumer satisfaction is influenced by social media use during the information search and alternative evaluation phases, with satisfaction increasing as the consumer advances toward final purchase and post-purchase review. Convenience sampling; data mostly from undergraduates; structured questionnaire; study conducted during 2024.

Keywords: Social Media, Social Media Marketing, Ranchi, Marketing, Consumer, Consumer Buying Behavior

Research paper - 06

UNDERSTANDING THE CUSTOMER PREFERENCE AND THE ADOPTION OF ELECTRIC VEHICLES OVER THE OTHER WITH REFERENCE TO RANCHI

Rev. Fr. Dr. Robert Pradeep Kujur s.j.¹, Dr. Shakil Anwar Siddique²

St. Xavier's College, Ranchi

Abstract:

Electric vehicles (EVs), with very low or no CO2 emissions, low noise, high efficiency and grid flexibility, are key to a sustainable transport sector. This paper overviews customer preference of EV adoption over others. Factors include environmental concern, cost saving, technology, government policies, infrastructure, innovation, brand. Addressing these can help policymakers, manufacturers, marketers encourage adoption. Charging standards/mechanisms and grid impact are presented.

Keywords: electric vehicles, adoption, customer preference.

Ph.D. Supervision

Sl No	Ph.D. Scholar/Candidate	Topic of Ph.D.	Date of Registration
1	Smriti Chaya Kachhap	A Study of Financial literacy & its impact on sustainable economic upliftment of tribal women in Jharkhand- A case study of Ranchi District	23/09/ 2024
2	Nisha Toppo	Role of HRM in Entrepreneurial Skill Development in Jharkhand – A Case Study of Tribal Women entrepreneurs of Ranchi District	

Name of the Faculty/Researcher - Dr. Jyoti Ignace Tete

Department of Commerce



- Total Number of Research papers published- 02

Research article 01

Jyoti Ignace Tete and Dr. Sandeep Kumar; EMERGING TRENDS IN WOMEN ENTREPRENEURSHIP IN JHARKHAND; INTERNATIONAL JOURNAL FOR RESEARCH PUBLICATION & SEMINAR, ISSN: 2278-6848 I Volume: 14 Issue: 05 I October - December 2023

EMERGING TRENDS IN WOMEN ENTREPRENEURSHIP IN JHARKHAND

Jyoti Ignace Tete¹ and Dr. Sandeep Kumar²

Department of Commerce, St. Xavier's College Ranchi, Jharkhand, India

Abstract

Women in Jharkhand are changing and showing up more often as potential entrepreneurs. There is a growing trend of women entering the business world with the intention of launching small and medium sized businesses. They have work experiences of other women and role models to draw inspiration from. Women's underlying entrepreneurial potential has gradually changed as a result of a growing knowledge of the role and status of economic society. A woman's rise in the business sector was mostly influenced by her aptitude, experience, and financial flexibility. Recent advances in women's entrepreneurship indicate a shift in the number of women pursuing formal business in the Indian state of Jharkhand. Despite these developments, women entrepreneurs continue to face barriers such as a lack of funding, poor infrastructure, gender stereotypes, and insufficient skills. By creating an environment that supports female entrepreneurs, Jharkhand may use their full potential to advance social and economic development that is inclusive. The report offers suggestions on how to address these problems, emphasizing the value of financial inclusion, gender awareness, talent development, and infrastructure development..

Keywords- *Women entrepreneurship, transformation, financial adaptability, inclusion, ecosystem.*

Research article - 02

Jyoti Ignace Tete; Social Entrepreneurship: Potential to Unshackle the Jharkhand Tribal Community from Witch Practices, International Journal of Early Childhood Special Education (JNT-JECSE), ISSN: 1308-5581 Vol 14, Issue 08 2022

Social Entrepreneurship: Potential to Unshackle the Jharkhand Tribal Community from Witch Practices

Jyoti Ignace Tete

Department of Commerce, St. Xavier's College Ranchi, Jharkhand, India

Abstract

Superstition is a big hindrance in the development of rural tribal communities of Jharkhand. It paralyses the minds of people to think beyond their daily needs. A lack of regular source of income could be one important reason for the existence of such belief. When people are economically backward and do not

have access to proper education and healthcare facilities. they tend to put the blame of any untoward happening on witchcraft. The literacy rate of the said community is another vital factor that hampers the community's economic progress. There are various schemes by the Central and the State Governments to uplift the rural tribal communities. However, the majority of the people are not able to capitalize on these schemes. It is worth noting that around 91 . 7 per cent of the tribals reside in rural areas. Many developmental programmes aimed at these communities hardly reach them. It is, therefore, necessary for social entrepreneurs to make inroads into the tribal areas and find ways and means to uplift the marginalized that exist in the state. Social entrepreneurship can play a massive role in the development of people like it has done in other places. By setting up business entities in rural areas, the rural populace could be helped to have a regular source of income. Once they are able to meet their basic needs, their living standards will improve and they can be freed from the social sin called superstition. Their true development lies beyond that.

Keywords- *Social entrepreneurship, witchcraft, dayan, dakan pratha, superstition.*

Name of Faculty- Fr. Dr. Roshan Baa, Assistant Professor

Department of Commerce

Email ID : roshansjranchi@gmail.com

Web of science ID- GNM-9530-2022

Orcid Id- 0000-0002-6582-4372

Scopus Author ID: 57562331200

Researcher ID: GNM-9530-2022

SciProfiles: 2736597



Research Papers Published:

- 1) Baa, Roshan & Others (2023) “Qualitative teaching and learning approaches to bridge the gap between Students-Teachers-Society (With reference to Ranchi, Jharkhand),” NOVYI MIR Research Journal. Volume 8, No. 1 pp. 606-617, Link: <https://drive.google.com/file/d/14l0hqfIS6ed1kiAU8WH7ArJx8P9OkhcS/view>

Abstract:

Education is witnessed by learning and living. The quality teaching learning enhance the growth and journey of individual to achieve the qualitative objective of life. The though process in the paper worked leads to understand the Morden thought and progress of the society towards the education. Every stakeholder of education are the participants in building up and maintenance of the quality learning. It is the call to build up the enation so the everyone may witness the new creation, a happy creation within the Society. Education is the change binging factor that boosts the educational ingredients.

Keywords: *Education psychology, Intellect measurement, Investment, Culture.*

- 2) Baa, Roshan & Others (2023) “Safety business programs and secured working conditions relate to productivity,” International Journal of Development Research (IJDR). Volume 13, No.01, pp. 61253-61255, Link: <http://journalijdr.com/sites/default/files/issue-pdf/26041.pdf>

Abstract-

Occupational health and safety allows the organisations to maintain good health, safety, and security of the employees in the workplace. Several employees are highly stressed about the quality and consistency of safety programmes in workplace. This stress results in poor motivation and poor performance of employees, which has a negative impact on overall organisational performance. Workplace safety and security improved employee engagement, employee retention, employee motivation, and organisational communication. These help in improving workplace performance and business productivity. The companies also need to improve the quality of the workplace safety plan development process. In order to do so, the organisations are highly focused on effective identification of possible hazards, effective communication planning, and effective personal safety metrics.

Keywords: Occupational safety and health, safety business, Programme, secured working conditions, Business productivity, employee motivation, and employee performance

- 3) Baa, Roshan & Others (2023) "Gender Discrimination as non-Cooperatives for women: A close Study of its impact on employee performance in an organisation," Zeichen Journal. Volume 9 ISSUE 02, pp. 61253-61255, Link: <https://drive.google.com/file/d/1Ny9Dt8MtguE9E64VjIKpkCdWCFLYr-DA/view>

Gender Discrimination as Non-Cooperatives for women: A close study of its impact on employee performance in an organization

Roshan Baa, Assistant Professor, St. Xavier's College, Ranchi, India

Claber Minj, Assistant Professor, Xavier Institute of Social Service, Ranchi, India

Bruno Toppo, Assistant Professor, St. Xavier's College, Simdega, India

Abstract

This study is an effort to understand that Gender discrimination is all about differently treating people with equal level skills and productivity. Base on the qualitative approach this study tries to undressed that Both men and women face gender discrimination at their workplaces. However, in India, gender discrimination against women is extremely visible. This research shows that women in India not only face discrimination at their organisation but also in society that affects their level of productivity. Besides gender discrimination leaves detrimental impacts on their mental health which can affect their productivity too. The introduction of effective policies to introduce these challenges is necessary for changing the current situation. Finally, some suggestive measures have been put forth for the reflection.

Keywords: Gender Discrimination, Indian Society, Mental Illnesses, Working Women, Productivity.

- 4) Baa, Roshan (2023) "Comparative Studies on Industrial Management Among China, Japan, India and Other Countries Servitization," Journal of Advanced Management Science. Volume 11 ISSUE 02, pp. 67-72, Link: <http://www.joams.com/2023/JOAMS-V11N2-67.pdf>
- 5) Baa, Roshan and A.K. Chattoraj (2023) "Evaluating the Role of Technology Adoption in Enhancing the Growth and Performance of Sail Post-Reform," International Journal for Multidisciplinary Research. Volume 05, ISSUE 03, May-June 2023, pp.1-10, Link: <https://www.ijfmr.com/papers/2023/3/3190.pdf>

Abstract

With the help of modernisation and digitalisation, SAIL has been making efficient use of its resources to maintain sustainability in the domestic as well as global market. The technological reformation taken up by the higher authority with the financial support of the government plays an eminent role in maintaining the sustainability of the organisation. This study critically focuses on the secondary quantitative data collection and statistical analysis to show the performance and growth of the SAIL. This study aims to deliver the information about the SAIL performance after expansion opportunity in the country by the support of government and dents the technology integration importance for developing the potential of competitiveness in the market. Moreover, it explores the knowledge about the safety practice through adoption of technology in the steel plant that helps their employees to get information about safety guidelines and also provides information

technology roles that help administration to make decisions. It explores the information about the technology support to enable the high strength steel production.

Keyword: *Technology, SAIL, Performance, Automation, Financial*

- 6) Baa, Roshan (2023) "Online Commerce in Ranchi (Jharkhand) of India: A Comparative Study of Zomato and Swiggy," International Journal Economics, Business and Management Research. Volume 07, ISSUE 06, June 2023, pp. 1-11, Link: https://ijebmr.com/uploads/pdf/archivepdf/2023/IJEBMR_1169.pdf

Abstract

Zomato and Swiggy are the two most popular food delivery apps in India, with each of them offering its own unique features and benefits to their customers and are successful in building strong brand recognition and customer loyalty. Zomato and Swiggy are the two dominant players in the food delivery industry, however, there always a new player entering the market regularly creating competition for them for which they need to continuously innovate and improve their service to stay ahead of the competition. By studying their marketing campaigns, we can learn about effective branding, customer acquisition, and retention strategies. The objective of the research is to determine the current best online food delivery company between Zomato and Swiggy from the point of view of the consumers living in Ranchi and to determine the most prominent factors that affect the decision making of a consumer. The survey also focused on trying to capture the mobile applications used by the respondents to order food online. The survey asked the respondents to give their preference between Zomato and Swiggy which helped us to make a definitive conclusion regarding our objectives. The research aimed to get responses from people belonging to diverse backgrounds so that the results obtained could be generalized for a wider population.

Keywords: *Zomato, Swiggy, Digital Marketing, Customer Satisfaction, E-Commerce, Buying Behaviour, Coupon Effectivity, Customer Rating*

- 7) Baa, R., & Minj, C. (2023). Role of Digital Education in Student Monitoring and Teacher Evaluation during Pandemic Period. Journal of Effective Teaching Methods, 1(2). <https://doi.org/10.59652/jetm.v1i2.11>, Vol. 1, Issue 2, June 2023, pp. 50-55.

Link: <https://journals.eikipub.com/index.php/jetm/article/view/11/16>

Abstract:

Digital education has played an important role in teacher evaluation and student monitoring activities during the recent COVID-19 pandemic situation. In digital education system, different kinds of tools and techniques are considered to monitor the important activities of the students. Diamond application is one of those strategies. On the other hand, educators also consider different kinds of strategies to evaluate the quality of the teaching activities of the teachers in the online education system in this pandemic situation. Overall, it can be acknowledged that digital education system plays a significant role in teacher evaluation and student monitoring activities during COVID-19 pandemic.

Keywords: *digital Education; COVID-19; advanced technology; quality of teaching*

- 8) Baa, Roshan & Chattoraj, A.K. (2023). The Goal of establishing Public Sector Enterprises and their roles in Society. International Journal of Early Child Special Education. Vol. 15, Issue 03, 2023, pp. 296-304.

- 9) Baa, Roshan & Chattoraj, A.K. (2023). Examining the impact of workforce restructuring on the industrial growth and performance of SAIL (Steel Authority of India Ltd.). *International Journal of Early Child Special Education*. Vol. 15, Issue 03, June 2023, pp. 287-295. Link:
- 10) Roshan Baa, A. K. Chattoraj. (2023). The Psychological Importance of Market Orientation in the Public Sector Enterprise from the viewpoint of an Emerging Economy. *Journal for ReAttach Therapy and Developmental Diversities*, 6(7s), 412–418. Retrieved from <https://www.jrtdd.com/index.php/journal/article/view/805>
- 11) Roshan Baa, A. K. Chattoraj. (2023). The Psychological Influence of Human Resource Management Practices on India's Public Sector Enterprises. *Journal for Re-Attach Therapy and Developmental Diversities*, 6(7s), 01–07. Retrieved from <https://www.jrtdd.com/index.php/journal/article/view/763>
- 12) Roshan Baa, A. K. Chattoraj. (2023). Impact of Public Sector Enterprises Reforms on Business Growth and Performances in India. *Journal of Namibia Studies*. Vol. 34 (2023). Special Issue 2. Pp. 1521-1532. link: <https://namibian-studies.com/index.php/JNS/article/view/2584>
- 13) Roshan Baa, A. K. Chattoraj. (2023). Assessing the Effectiveness of Public Sector Enterprises Reforms on Growth and Performances of Steel Authority of India LTD. *Journal of International Journal of Professional Business Review*. Vol. 8. No.8 (2023). Pp. 1-15.
- 14) Roshan Baa, A. K. Chattoraj. (2023). The Role of Customer Satisfaction in Improving the Performance of Sail (Steel Authority of India LTD). *Journal of International Journal of Professional Business Review*. Vol. 8. No.8 (2023). Pp. 1-21. link: <https://doi.org/10.26668/businessreview/2023.v8i8.3368>
- 15) Roshan Baa, A. K. Chattoraj. (2023). Identifying the key factors influencing the Industrial growth and performance of SAIL after the Reforms. *Russian Law Journal*. Vol. 11 No. 5 (2023). Pp. 605-612. link: <https://www.russianlawjournal.org/index.php/journal/article/view/2664/1534>

Abstract:

Without the steel industry, economic innovations that serve society are not at all possible. Iron and steel industrial company like SAIL Company is bound to set high standards to strengthen their operation and challenge boundaries through planned acquisitions. Because of this kind of standard, this public sector company is always ready to provide support and assistance in other sectors of the economy. This study is based on the secondary qualitative data collection and statistical analysis of the research to show factors contributing to the overall performance and growth of the SAIL Company in India as well as in the global platform.

Keywords: *SAIL, reforms, Industrial growth*

- 16) Roshan Baa, A. K. Chattoraj. (2023). The Growth, Challenges and Disruption in India within the Public Sector Enterprises in Post Reforms 1991. *SCOPE*. Vol. 13 No.2 (2023). Pp. 620-628.
- 17) Baa, Roshan (2022) "Economic Integration, its recent practical challenges encountered and the solutions adopted", *Journal of Economics, Business and Management* vol. 10, no. 4, pp. 267-271, Link: <http://www.joebm.com/index.php?m=content&c=index&a=show&catid=104&id=1094>
- 18) Baa, Roshan & Chatoraj, A. Kumar (2022) "The Significance, Role, and Need for Public Sector Enterprises in Economic Growth", *International Journal of Professional Business Review*. Volume 7, No. 5 pp.1-16, Link: <https://www.openaccessojs.com/JBReview/article/view/582/315>

- 19) Baa, Roshan (2022) "A Study on the Contribution that a Business Plan Makes to the Expansion of a Small Company", International Journal of Professional Business Review. Volume 7, No. 5 pp.1-15, Link: <https://www.openaccessojournals.com/JBReview/article/view/585/316>
- 20) Baa, Roshan (2022) "Problems faced by the footpath vendors in Ranchi City (Jharkhand) of India during COVID-19," International Journal of Research and Analytical Reviews (IJRAR). Volume 9, No. 4 pp.941-950, Link: <https://ijrar.org/papers/IJRAR22D2269.pdf>

Abstract:

This study is an attempt to understand Problems faced by the footpath vendors specially taking the sample from Ranchi city (Jharkhand State) of India. It also gives special focuses on the living standard affected during the covid-19 of these type of vendors. The study promotes the need of social dialogue to understand them and come closer to the solution of the problems they face. The footpath vendors in Ranchi city are one of the most deprived sections of the urban working poor, deprivation results from their low negotiating control. The paper also emphasis the collective bargaining of the vendors to reach the decent working conditions. It also promotes the rights of workers and reveals the rate of unionization among the vendors is low in Ranchi city. The study promotes the social dialogue and mobilizes the vendors towards realizing their rights at work.

Keywords: *Footpath vendor, Urban Street, Social dialogue, vendor rights, Collective bargaining, Deprivation*

- 21) Baa, Roshan (2022) "Utilization of Artificial Intelligence in Dealing with the Creation of System that Can Learn to Emulate Human Tasks Using Their Prior Experience and Without Any Mutual Intervention," The International Journal of Business Management and Technology. Volume 6, No. 6 pp.244-252

Participation in FDP on Research Methodology-

- 1) Participated in the Faculty Development Programme (FDP) organized by IIM, Bodh Gaya, June 20-29, 2022, "Research Design, Methods and Analysis".

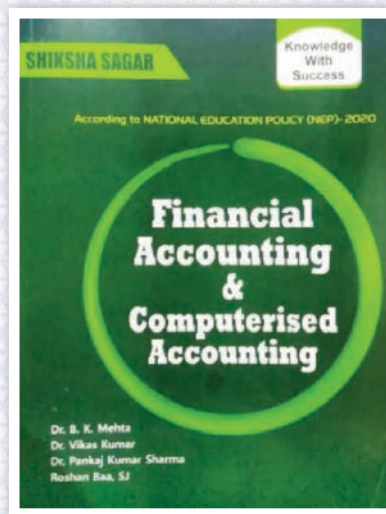
Paper Presented in Seminar/Conference (National/International):

- 1) Paper Presented: "Assessing the Impact of Regulatory Changes on the Industrial Growth and Performance of SAIL Post Reform", National Conference on Business Management and Social Innovation (NCBMSI-23)" 8th July 2023, Goa, India.
- 2) Paper Presented: "Digital India-Its Pros and Cons on Indian Community" 3rd Bihar Social Science Congress, "Growth, Inequality and Justice" 30th and 31st May 2023, Magadh University, Bodh Gaya (Bihar), India.
- 3) Paper Presented: "The Importance of Market Orientation in the Public Sector Enterprise from the viewpoint of an Emerging Economy" 6th International Conference on Multidisciplinary Research Studies and Education (ICMDRSE- 2023) May, 19-20, 2023, Philippines.
- 4) Paper Presented: "The Influence of Human Resource Management Practices on India's Public Sector Enterprises" 4th International Conference on Multidisciplinary and current Educational Research (ICMCER-2023) April, 11- 12, 2023, Bangkok, Thailand.
- 5) Paper Presented: "Emerging Different Digital Applications and Its Impact on Global Electronic

Markets” 4th International Conference on Research in Management (ICRMANAGEMENT-4060), 3-5 June, 2022, Oxford, United Kingdom.

Book-1- Financial Accounting,

Shiksha Sagar, Agra. ISBN: 978-93-86114-20-4.



Chapter(s) in Books:

- 1) Baa, Roshan and Minj, Claber. (2023) **“Gender Equality in the Workplace”**, In Dr. Amit Kumar Mandal & Group., India and the World: Economy I Society I Polity. Peered Reviewed Book. An International Edited Book. July, 2023. First Ed.), pp.317-325, Thomas Press, New Delhi, India. ISBN: 978-93-5529-653-5
- 2) Baa, Roshan and Minj, Claber. (2023) **“Effect of Counter-Productive Work Behaviour on Customer Relationship Management”**, In Dr. Dilipkumar, A. Recent Trend in Business Management and Economics. Peered Reviewed Book. An International Edited Book. June, 2023. First Ed.), pp.31-41, RED'SHINE PUBLICATION, Stockholm, Sweden. ISBN: 978-91-89764-10-1.
- 3) Baa, Roshan. (2023) **“Difficulties in Remote Work and How Modern Technology Can Resolve it”**, In Dr. Dilipkumar, A. EMERGING ISSUES IN INDIA. Peered Reviewed Book. An International Edited Book. May, 2023. (First Ed.), pp.27-36, RED'SHINE PUBLICATION, Stockholm, Sweden. ISBN: 978-91-89764- 06-4.
- 4) Baa, Roshan. (2022) **“Privatisation and Mergers of Indian Bank”**, In Ravidra Kumar. Emerging Trends in Business and Its impact on Indian Economy, (First Ed., pp.82-87) Jabalpur (M.P.), India, SRF, Research Journal & Book Publication House. ISBN :978-93-92079-27-6.
- 5) Baa, Roshan. (2021) **“Need of Sustainable Agriculture and Rural Development for Nation Building”**, In Ravidra Kumar. Sustainable Agriculture and Rural Development (First Ed., pp.128-133) Jabalpur (M.P.), India, SRF, Research Journal & Book Publication House. ISBN :978-93-92079-19-9.

Books Edited:

- 1) Post-Modern Research Explorer. Peered Reviewed Book. Contribution as Co- Editor. An International Edited Book. May 4, 2023. Notion Press, India, Singapore, Malaysia. **ISBN-13: 979-889026508-1.**

Abstract

In the realm of competitiveness, lean manufacturing is an effective and rapidly expanding methodology. Lean production is used to continuously remove waste from the production process in order to increase productivity and efficiency. To meet customers' needs for high quality and cheap cost, lean manufacturing

is primarily focused. Through well defined rules and norms, the technique not only aids in identifying the causes of waste but also in its eradication. The purpose of this paper is to explore the principles of lean manufacturing in order to increase productivity, enhance product quality, and cut costs. Waste categories are described. The methods for reducing waste are discussed.

- 2) Multidisciplinary Approaches in Social Sciences, Education & Languages (Vol- 5). Peered Reviewed Book. Contribution as Associate Editor. A National Edited Book. May, 2023. Red'shine Publication Pvt. Ltd. Lunawada, India. ISBN: 978- 81-19070-76-3.
- 3) Environmental Pollution: Treatment and Protection. Peered Reviewed Book. Contribution as Associate Editor. An International Edited Book. May, 2023. Red 'shine Publication. Stockholm, Sweden. ISBN: 978-91-89764-09-5.

Abstract

Environmental protection is a multidimensional concept encompassing various practices, policies, and strategies aimed at safeguarding the natural environment and mitigating human impacts on it. It involves the preservation of ecosystems, conservation of natural resources, prevention of pollution, promotion of sustainable development, and addressing climate change. Environmental protection is essential for maintaining ecological balance, safeguarding biodiversity, ensuring clean air and water, and promoting the overall well-being of both present and future generations. Efforts towards environmental protection involve a combination of governmental initiatives, international agreements, community participation, and individual actions. Governments enact laws and regulations to regulate industrial activities, promote sustainable practices, and enforce environmental standards. International agreements, such as the Paris Agreement, facilitate global cooperation to mitigate climate change and promote sustainable development. Addressing climate change is an urgent priority in environmental protection, Mitigation efforts focus on reducing greenhouse gas emissions, transitioning to renewable energy sources, improving energy efficiency, and promoting sustainable transportation systems. Education and awareness play a crucial role in environmental protection. By promoting environmental literacy and raising awareness about the consequences of unsustainable practices, individuals and communities can make informed choices and take responsible actions to protect the environment. In summary, environmental protection is a complex and vital endeavour that requires collective efforts at all levels.

- 4) Bridging the Gaps: Research Insights. Peer Reviewed Book. Contribution as Editor in Chief. An International Edited Book. May, 2023. Notion Press, India, Singapore, Malaysia. ISBN-13: 979-8890661456

Abstract

Education is a natural amalgamation of human inner powers. The educational institutions are the internal parts of the society. To develop any kind of society or nation education plays a vital role. In this virtual era, the role of education is major navigating tool for the world. When the digitalization existed in the present days at global level, the digital education is also came into exist and emphasized the people to keep learning to meet the digitalization and its objectives. The countries like India the rural people are in larger sector. To run with present digital world, the children who are in the rural backgrounds are to be educated in digital formats. In that process, the children as well as teachers are to be aware about the digital education, its uses, need, importance and the consequences while learning and benefits after so far. This article shall attempt to explain some of the important facets on Digital education among the children in the villages.

- 5) Recent Trend in Business Management and Economics. Peered Reviewed Book. Contribution as Co-Editor. An International Edited Book. June, 2023. Red 'shine Publication. Stockholm, Sweden. ISBN: 978-91-89764-10-1.

Abstract

This book is deals with multiple trends for business development. Business Management is constantly shifting, as new trends and developments shape how organizations operate. As technology develops and customer needs shift, businesses must remain aware of current management practices to remain competitive in today's marketplace. This book will help to the users to get some idea for the development of any kind of business in this competitive global market.

Name of the Faculty/Researcher- Dr. Srinath Koley

Department of Commerce



Conference presentation - 01

ROLE OF INNOVATIVE PRACTICES IN INCREASING GROWTH WITHIN COMMERCE AND MANAGEMENT SECTORS IN JHARKHAND

Dr. Srinath Koley¹ and Dr. Sanjay Prasad²

Department of Commerce, St. Xavier's College Ranchi, Jharkhand, India

Abstract

This paper explores the role of innovative practices in the evolving landscape of Commerce and Management in the new millennium. Through analysis of both primary surveys and secondary data, this study focuses on identifying key factors including digital transformation, entrepreneurship campaign, skill development, public-private partnerships and cluster-based innovation driving regional economic transformation. Findings specify that digital infrastructure expansion, targeted skill training, incubation centers and joint governance are very much correlated with enriched business performance and employment generation. For the research a mixed method approach i.e. a blend of quantitative data and qualitative stakeholders' feedback has been used here. Policy recommendations focus on scaling tech-enabled solutions, strengthening institutional frameworks and fostering inclusive entrepreneurial ecosystems. This paper also highlights limitations and outlines areas for future research.

Keywords- *Digital Growth, Skill Development, Entrepreneurship.*

Name of the Faculty/Researcher- Dr. Anirban Gupta

Department of Commerce



- **Number of New Ph.D. Candidate registration- 04**

Ph.D. Supervision

Sl No	Name of Research Scholar	Date of Registration	Topic of Ph.D.	Status
1	Ashish Sharma	30-01-2025	The Effect of E-Commerce on Offline Retail Market–A Case Study of Ranchi District.	Ongoing
2	Anup Kujur	17-04-2025	Use of Artificial Intelligence in Human Resource Management: A Comparative Study of TCS and Infosys.	Ongoing
3	Megha Kumari	26-04-2025	Adoption of Financial Technology (Fin-Tech) on Banking Sector –A Case Study of State Bank of India and HDFC Bank in Ranchi District.	Ongoing
4	Nafisha Ashraf	08-04-2025	A Comparative Study on Working Capital Management and Financial Analysis of TATA Motors and Maruti Suzuki India Limited.	Ongoing

Conference/Seminar- 2

1. **Participated and Presented** Paper on “Emerging Trends in Entrepreneurship among the College students of Ranchi” on 4th and 5th April, 2025 at Gossner College, Ranchi.
2. **Participated and Presented** Paper on “Digital India–It’s Pros and Cons on Indian Economy” on 3rd Bihar Social Science Congress on 30th and 31st May 2023.

Name of the Faculty/Researcher- Dr. Sanjay Prasad

Department of Commerce



Research article - 01

Dr. Sanjay Prasad; Impact of E-Commerce in India: Issues & Challenges of Jharkhand, International Journal of Novel Research and Development, Volume 8, Issue 6 June 2023 | ISSN: 2456-4184

Impact of E-Commerce in India: Issues & Challenges of Jharkhand

Dr. Sanjay Prasad

Department of Commerce, St. Xavier's College Ranchi, Jharkhand, India

Abstract

In India, a center of commerce is located in all the states, one of them Jharkhand is also located, which is now rapidly expanding into an e-commerce center. Everything can be bought on this web, from needlework to shipping to all districts of this city. With the arrival of new and new players, it is still common for existing players and new competitors to think of creative ways to offer their goods and services. Along with this, electronic commerce has become an integral part of all these types of existing businesses. Not just one approach to support or improve, but many, e-commerce is revolutionizing the marketplace. It is also becoming a problematic invention that is changing the traditional way of doing business to a great extent. E-commerce is paving the way for huge business growth in our country. And this time increasing web clients have further added to its growth. E-commerce has developed the online travel industry in many ways and our country is trying to incorporate another business route through the online retail industry. Presently through the study, it is being found that an attempt has been made to delineate the current scenario and facilitators of E-commerce in India, dissect the current pattern of E-commerce and identify the potential of E-commerce in India. Obstacles have been observed.

Keywords- *E-commerce, India, E-market.*



Humanities



Name of the Faculty/Researcher- Dr. Achal Sinha

Department of English

Email- achalsinha@sxcran.org



- **Total Number of Research papers published- 04**
- **Total Number of Research Papers Presented in Seminar/Conference- 04**

Research Paper - 01

The Eternity Vol. XIV, No. 3, 2023, ISSN 0975-8690

Unveiling Gender: The Postmodern Narrative of Gender and Identity in Kate Atkinson's Trilogy

Dr. Achal Sinha Assistant Professor, Department of English, St. Xavier's College, Ranchi

Sonal Priyadarshini Research Scholar, Ranchi University, Jharkhand, India

Abstract

A large number of postmodern women authors like to employ their unique narrative technique to interrogate gender and identity. The quest for identity that we notice in various postmodern novels never fail to have a well defended weight on gender, well displayed in the portrayal of female protagonists who are constantly in search of their right place in the society. In this paper I propose the reading of the first three novels of a leading, award winning British author Kate Atkinson- Behind the scenes at the Museum (1995), Human Croquet (1997) and Emotionally Weird (2000) respectively. These family sagas, often referred to as a postmodern trilogy, each separately embodies the quest of a new female character and her irrepressible growth through sadness, misery and tragedy to the moment when she finally discovers selffulfilment. The internationally acclaimed novelist not only demystifies motherhood uncovering it as a social construct rather than a biological instinct but also addresses the general theme of identity highlighting the matter in question whether identity is the product of nature or nurture? Through this paper it will become evident that these women living in 20th century Britain were still striving hard to exercise their autonomy towards getting over the hurdles and hindrances inflicted on them by the imperative male dominated and hetero-normative society. The aim of this research paper is to attempt a comprehensive and exhaustive survey of Atkinson's new woman whose search for identity springs from the fact that she is discontented from her life and with all her discontents and discomforts, she finds a way out for herself.

Keywords: *Quest, Postmodern, Trilogy, Family saga, Motherhood, Autonomy, Hetero-normative.*

Research Paper - 02

The Eternity Vol. XIV, No. 4, 2023 , ISSN 0975 -8690

Ecological Concerns in J.M. Coetzee's Life and Times of Michael K

Dr. Sachindra Nath Mishra Assistant Professor, Dept of English, St. Xavier's College Ranchi

Dr. Achal Sinha Assistant Professor, Dept of English, St. Xavier's College Ranchi

Abstract

Environmental studies have garnered the attention of literary critics in recent decades. The ever-growing pressures of capitalism, technological advancement and modernization pose serious threats to the environmental balance. The main premise of this research paper is to investigate the representation and response to ecological concerns in J.M. Coetzee's *Life and Times of Michael K* through the lens of 'Ecocriticism'. Although noted for his subtle portrayal of pressures exerted by South Africa's socio-political milieu, Coetzee's works of late have been analysed in the light of ecological concerns. While deliberating on the growth and development of ecocriticism as an educative approach to literary criticism, the research paper pleads that Coetzee's novel is informed by a strong ecological vision, wherein he uses nature as a background to reflect upon the social and the political turmoil that characterises much of human life.

Keywords: *Coetzee, Ecology, Ecocriticism, Life and Times of Michael K,*

Research Paper - 03

Praxis International Journal of Social Science and Literature

A Peer-reviewed & Open Access eJournal with SJIF 2022 = 5.75, ISSN: 2581-6675, Vol. 7, No. 04, April 2024
DOI: 10.51879/PIJSSL/070405; E-mail: editor.pijssl@gmail.com, Website: www.pijssl.com

Exploring Human Nature through Crime Fiction: A Study of Kate Atkinson's Jackson Brodie Novels

Sonal Priyadarshini, Research scholar, PG Department of English, Ranchi University, Ranchi, Jharkhand – 834008; E-mail: priyadarshinisonal6@gmail.com

Dr. Achal Sinha, Assistant Professor, PG Department of English, ST. Xavier's College, Ranchi, Jharkhand – 834001, E-mail: sinhachal@gmail.com

Abstract

Kate Atkinson's Jackson Brodie series stands out as a literary exploration that intertwines elements of crime fiction with profound character studies. While the narrative typically focuses on private investigator Jackson Brodie solving mysteries, Atkinson's approach extends beyond conventional crime storytelling. Central to Atkinson's narrative are the characters themselves, portrayed with depth and complexity. Each character possesses their own unique story, motivations, and emotional depth, making them more than mere plot devices. Atkinson aptly weaves together their lives, allowing their paths to intersect in unexpected ways. At the core of Atkinson's storytelling are the crimes themselves, which serve as the driving force for delving into broader themes and character development. These criminal incidents provide the framework for Atkinson to delve into the intricacies of her characters' lives, relationships, and personal backgrounds. She examines the moral ambiguities of justice and the psychological toll of violence, challenging readers to confront the complexities of human nature. This research paper aims to undertake a comprehensive analysis of Kate Atkinson's crime fiction, focusing on key thematic elements, narrative techniques, and the author's contribution to the evolution of the genre. It also studies how Atkinson's crime fiction offers a compelling exploration of human nature, characterized by its depth, nuance, and empathy. Through vividly drawn characters, moral complexity, and thematic richness, she invites readers to reflect on what it means to be human in a complex and ever-changing world.

Keywords: *Crime fiction, Mystery, Psychology, Past, Trauma, Human nature*

Research Paper - 04

RE-MARKINGS Vol. 21 No.1 March 2024 ISSN 0972-611X

Re-Markings :A Biannual Refereed International Journal of English Letters

Impact Factor 11.489 Cosmos Foundation, Berlin Brandenburg, Germany

Reshaping the Idiom: The Protest Motif in Hansda Sowvendra Shekhar's short story "The Adivasi Will Not Dance".

Authors : 1. Dr. Achal Sinha, Assistant Professor of English Post Graduate Department of English

St. Xavier's College, Ranchi, Ranchi University Email Address: sinhachal@gmail.com

2. Saurav Kumar Singh, Research Scholar, University Department of English, Ranchi University, Ranchi
Email Address : sauravsingh1386@gmail.com

Abstract

Language is an instrument of communication. The multiple genres of literature have employed language, both, subtly and explicitly in order to convey the intended suggestion and purpose to the reader/s. Hansda Sowvendra Shekhar's book, "The Adivasi Will Not Dance" (2015), is an attempt to reveal the angst and "otherness", that is deeply internalized in the minds of the Santali people of Jharkhand, owing to their uneasy interactions with the non-tribal communities and also the equivocal political establishments of the state. The present book is a collection of ten short stories, and the last story, that is, "The Adivasi Will Not Dance", will be critically examined, and eventually developed into a research article. This story resists to remain apolitical, and vividly presents the problems of the Santals. In this story, the troupe-master Mangal Murmu, refuses to perform for the former President of India (clearly alluding to Shri Pranab Mukherjee), and is beaten down to submission. Hansda Sowvendra Shekhar, presents the situation of Mangal Murmu as a microcosm to interpret the actual condition of the marginalized Santali people of Jharkhand. Shekhar successfully deconstructs the political situation of Jharkhand, using language as a viable tool in this short story. On a general note, we may categorize this work, as protest literature.

Keywords : *language, culture, Santal, protest, marginalization, colonization.*

Research Paper - 05

RE-MARKINGS Vol. 21 No.1 March 2022 ISSN 0972-611X, Re-Markings. A Biannual Refereed International Journal of English Letters,

Impact Factor 11.489 Cosmos Foundation, Berlin Brandenburg, Germany

The Marabar Caves and Temple In A Passage To India: A Social Constructivist Paradigm

Achal Sinha, Assistant Professor of English Post Graduate Department of English, St. Xavier's College, Ranchi, Ranchi University Email Address: sinhachal@gmail.com

Widely acknowledged as one of the greatest classics of the 20 century, E. M. Forster's A Passage to India is also accepted as his profoundest effort in his treatment of the political and spiritual themes. It was his fullest and sincerest effort to deal with a new kind of experience to bring together races, creeds and faiths. An attempt has been made in this paper to re-visit and re-interpret some of the maxims which have been presented to readers. Forster's tryst with India is also seen as a continuation of an earlier quest to look for a more wholesome spiritual experience in an otherwise incomprehensible but vast and profound civilisation.

Keywords - *literary consciousness, liberal humanist paradigm, self-consciousness, discontinuity, self-referentiality representational dilemma, spiritual consciousness*

Name of the Faculty/Researcher - Dr. Sumana Ghosh

Department of English

Email- sumana303@gmail.com



Title of the Chapter: Sita to Abhaya: Plight of Women Down the Ages

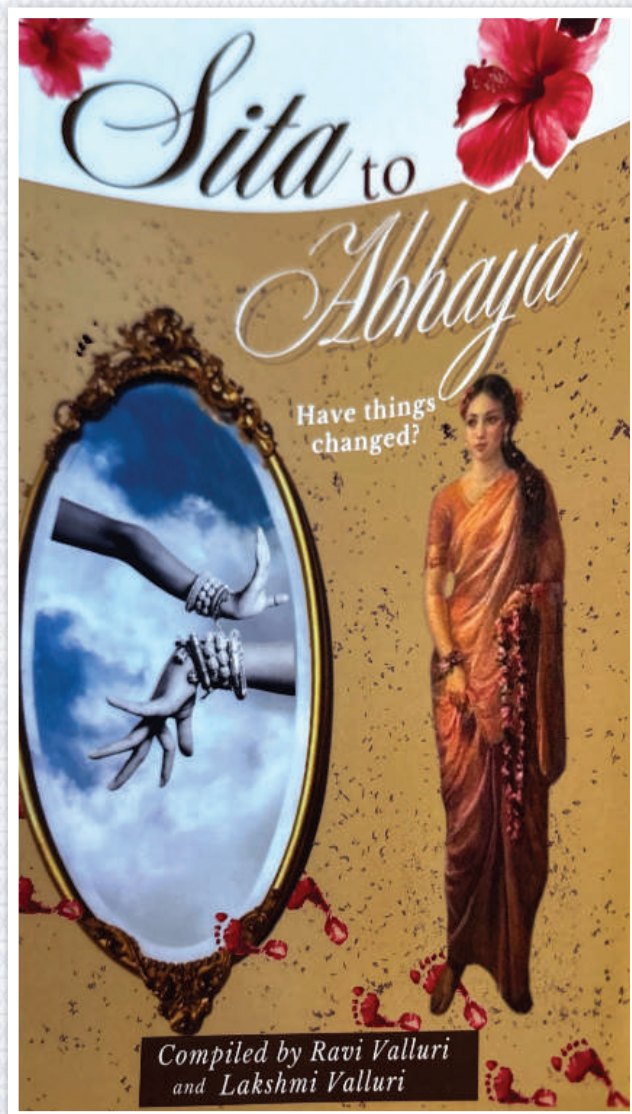
Title of the Book : Sita to Abhaya: Have Things Changed?

(Compiled by Ravi Valluri and Lakshmi Valluri)

ISBN: 978-93-91465-49-0

First Published in 2025

Published By: AKS Publishing House, New Delhi



Name of the Faculty/Researcher- Dr. Sachindra Nath Mishra

Department of English

Email- sachinmishra@sxaran.org



- **Total Number of Research papers published- 2**
- **Total Number of Research Papers Presented in Seminar/Conference- 9**

Research article 01

IJELLS: International Journal of English: Literature, Language and Skills–An Open-Access, Peer-Reviewed Journal; Volume 13, Issue 1 (April 2024)

Unshackling the Fetters of Language: Influence of Oral Traditions on the Poetry of Mamang Dai

Sachindra Nath Mishra & Priya Ranjan Tiwari

Department of English , St. Xavier's College Ranchi, Jharkhand, India

Abstract

This article explores the complex interplay between language, power dynamics, and cultural preservation in marginalized societies, focusing on the oral literature of the North East India. Mamang Dai emerges as a significant voice in this discourse, drawing on her Adi heritage and the rich oral traditions of her community to create poetry that serves as both a form of cultural preservation and resistance against dominant cultural narratives. Dai's works delve into the deep connections between humans and nature, utilizing elements from the natural world to carve out a distinct tribal identity. Through her engagement with tribal customs, rituals, folklore, and myths, Dai's poetry reflects a communal consciousness and collective responsibility. Ultimately, Dai's poetry can be viewed as a form of resistance, seeking to reclaim and retain the cultural heritage of her community amidst ongoing challenges posed by modernization and globalization.

Keywords- *Orality, North-East India, Heterogeneity, Resistance, Cultural Identity, Indigenous*

Research article - 02

Ecological Concerns in J.M. Coetzee's Life and Times of Michael K, The

Eternity, Vol. XV, No. 1, Jan-Mar 2024, ISSN: 0975-8690.

Ecological Concerns in J.M. Coetzee's Life and Times of Michael K

Dr. Sachindra Nath Mishra ,Dr. Achal Sinha

Department of English, St. Xavier's College Ranchi, Jharkhand, India

Abstract

Environmental studies have garnered the attention of literary critics in recent decades. The ever-growing pressures of capitalism, technological advancement and modernization pose serious threats to the environmental balance. The main premise of this research paper is to investigate the representation and response to ecological concerns in J.M. Coetzee's *Life and Times of Michael K* through the lens of

‘Ecocriticism’. Although noted for his subtle portrayal of pressures exerted by South Africa’s socio-political milieu, Coetzee’s works of late have been analysed in the light of ecological concerns. While deliberating on the growth and development of ecocriticism as an educative approach to literary criticism, the research paper pleads that Coetzee’s novel is informed by a strong ecological vision, wherein he uses nature as a background to reflect upon the social and the political turmoil that characterises much of human life.

Keywords - Coetzee, Ecology, Ecocriticism, Life and Times of Michael K,

BOOK CHAPTER:

NAME OF THE BOOK: Literary Echoes Across Time and Culture, Neyan Publications.

Title of the Chapter: Reverting the Gaze: Analysing the Portrayal of Men in Shashi Deshpande’s ‘That Long Silence’

Authors: Dr. Shayantani Banerjee, Dr. Sachindra Nath Mishra

Conference/Seminar - 9

Research Papers Presented in National/ International Conferences & Seminars

Conference/ Seminar - 01

National Seminar on ‘Eco- Criticism’ (26th-27th August 2022)

Organised by Dept. of English, Ranchi Women’s College, Ranchi

Title of the Paper: “Ecological Concerns in ‘J.M. Coetzee’s Life & Times of Michael K.’

About the paper: The paper focused on the how nature acts as an agent of comfort and resilience for the protagonist of the novel against the political turmoil of apartheid hit South Africa.

Conference/ Seminar - 02

National Seminar on NEP-2020 Higher Education@75

Organised by Munger University, Munger (06th September, 2022)

Title of the Paper: NEP 2020: Reimagining Knowledge, Access and Global Competitiveness in India

About the paper: The paper focuses on examining the role of the National Education Policy (NEP) 2020 in reshaping India’s higher education system at 75 years of independence. It highlights how NEP envisions greater inclusivity, interdisciplinarity, and global competitiveness while addressing long-standing structural challenges. The study critically assesses the balance between policy aspirations and ground-level realities, situating NEP as both a continuation of India’s educational journey and a roadmap for the next 25 years.

Conference/ Seminar - 03

International Conference on *Margins and Centers: Negotiating Power, Identity and Resistance in South African literature*

Organized by : Amity Institute of English Studies & Research, AUJ (24th- 25th November, 2022)

Title of the Paper: “To exist without a Story: Subjectivity and Resistance in Life & Times of Michael K”

About the Paper: The paper examines how Michael K’s silence and withdrawal in Coetzee’s *Life and Times of Michael K* functions as a form of resistance rather than passivity. It argues that the protagonist embodies an alternative subjectivity that refuses assimilation into dominant political and social narratives.

Conference/ Seminar - 04

International Conference on “*Understanding the European Union: Structures, Processes and Challenges.*”

Organized by: Jean Monnet Module and Department of Political Science , St. Xavier’s College, Ranchi. (3rd-4th November, 2023)

Title of the Paper: “*Issues of Multiculturalism in Novels of J.M. Coetzee.*”

Conference/ Seminar - 05

International Conference on “*International Conference on Environment, Aquaculture and Sustainable Agriculture.*”

Organized by: Department of Botany, St. Xavier’s College, Ranchi & International Foundation for Environment and Ecology, Kolkata, in association with Durga National Trust (DNET), Bihar, in collaboration with Confederation of Indian Universities, New Delhi. (22nd- 24th September, 2023)

Title of the Paper: “*Ecological Concerns in Ramcharitmanas.*”

Conference/ Seminar - 06

International Conference on “*Stories Matter (Re) thinking Narratives, Aesthetics and Human Values.*”

Organized by: Department of English, Faculty of Arts, Banaras Hindu University. (6th-7th December, 2024)

Title of the Paper: “*The Narrative Reinvention of Ram: Tulsidas’ Ramcharitmanas and the rewriting of the Epic Tradition.*”

Conference/ Seminar - 07

International Conference on “*Politics of Language and Indigenous Voices: Tribal Narratives in English.*”

Organized by: Department of English Studies, Central University of Jharkhand, in collaboration with Coal India Limited and Jharkhand Chaitanya Parishad. (19th-20th March, 2025)

Title of the Paper: “*Echoes of the Ancestors, Whispers of Change: Hybridity and Syncretism in Mamang Dai’s The Black Hill and Easterine Kire’s When the River Sleeps.*”

Conference/ Seminar - 08

National Seminar on “**Cinema and Literature**” **Organized by:** Department of Bengali and Department of English, Mathabhanga College in collaboration with Silliguri Cine Society & IQAC, Mathabhanga College. (30th May, 2025)

Title of the Paper: Margins of Fire: Caste-Based Oppression and Dalit Resistance in Jhoothan and Fandry

Conference/ Seminar - 09

International Conference on “*Emerging Management Practices & Social Impact on Sustainability (ICMSIS 25)*”

Organized by: Amity University Jharkhand

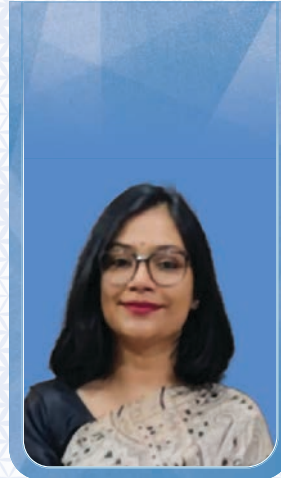
Title of the Paper: From Scroll to Screen: Cinematic and Animated Retellings of the Ramayana and Ramcharitmanas.

Name of the Faculty/Researcher- Dr. Ananya Bose

Department of English

Email- ananyabose@sxcran.org

ORCID ID- 0009-0001-4623-0763



- **Total Number of Research papers published- 2**

Research papers - 01

International Journal of English Literature, Language & Skills (A Peer-Reviewed Journal) Volume 13 Issue 1; April 2024; ISSN 2278-0742; pp. 17 – 25 www.ijells.com

Title: Values and the Village: An Ecocritical Reading of Kamala Markandaya's Nectar in a Sieve

Author: Ananya Bose

Abstract

Nature nurtures and therefore, has a formative influence on humans. The values that nature exhibits through its own functioning are inspiring, and when emulated, can lead man towards contentment, joy and a sense of fulfilment. Kamala Markandaya's novel Nectar in a Sieve presents the life of a woman who has been reared in the village by nature and finds a husband who too is Nature's son. They encounter poverty and deprivation throughout their lives and must struggle every time, everywhere. At all times, it is somehow Nature that comes to their rescue and allows them to sail through life without stopping. This paper presents an ecocritical study of the novel to explore and highlight the relationship between the village and the characters' value system that enables them to lead their life ungrudgingly. It studies the influence their lives in the lap of nature have on the family and how the values that they have inculcated in the process play a significant role in forming their perceptions and lifestyle.

Keywords: *Ecocriticism, Nature, Value system, Village, Urbanisation, Hope, Coexistence*

Published in:

Research papers - 02

B. Aadhar (Single Blind Peer-Reviewed & Refereed Indexed) Multidisciplinary International Research Journal; Human Rights; March – 2023; ISSUE No- (CDXV) 415 – B; Impact Factor - 8.632 (SJIF); ISSN - 2278-9308

Title: Literature for Human Rights: A Study of Harper Lee's To Kill A Mockingbird through the Lens of Human Rights Studies

Author: Ananya Bose

Abstract

This study aims to explore and analyse the scope of literature beyond the arena of entertainment and in the expression of human rights concerns. It attempts to study different works of literature written across countries and down the ages to investigate how literary writers have taken up the social and moral responsibility of composing literature with a purpose and how they have committed themselves to portraying human rights concerns for the transformation into a healthier society. The study also conducts a comparative analysis of the Universal Declaration of Human Rights and the values propagated in Harper Lee's novel, *To Kill A Mockingbird* to examine how the novel voices human rights issues.

Keywords: *Engaged Literature, Committed Literature, Human Rights Literature, Fiction, Rights, Human Rights, Universal Declaration of Human Rights, To Kill A Mockingbird*

Name of the Faculty/Researcher: **Shashi Prava Tigga**

Department of English

ORCID ID- 0009-0002-4467-6654



- Total Number of book chapters published- 01

Book Chapter-01

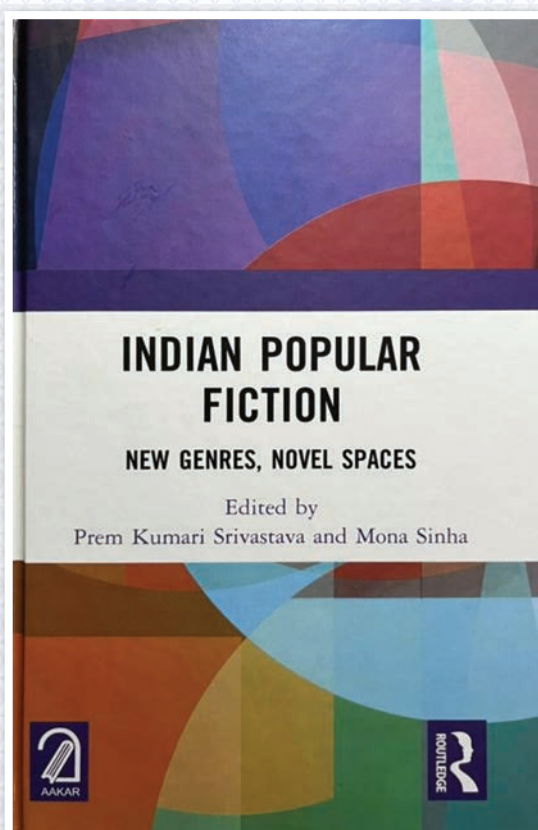
Chapter Title: Women and Statecraft: Reading Meenakshi Reddy Madhavan's Novels in the Series 'Girls of the Mahabharata'

About the chapter:

This chapter examines Meenakshi Reddy Madhavan's Girls of Mahabharata series—The One Who Swam with the Fishes (2017) and The One Who Had Two Lives (2018)—to explore how the voices of “forgotten girls” in the epic are reclaimed and reinterpreted in contemporary literary discourse. Re-reading the Mahabharata through Madhavan's narrative lens, the study foregrounds questions of gender, sexuality, desire, and their intersections with statecraft. By situating Madhavan's retellings within the broader cultural tradition of reimagining the epic, the chapter highlights how her work not only affirms the relevance of the Mahabharata in modern times but also interrogates its patriarchal structures by giving agency to marginalized female figures. Through this analysis, the research seeks to uncover the nuanced ways in which women's subjectivities are constructed and contested in both ancient myth and contemporary fiction.

Published in the book: **Indian Popular Fiction: New Genres, Novel Spaces** edited by Prem Kumari Srivastava and Mona Sinha, published by Routledge, 2022.

Refresher Course- on 'Advanced Research Methodology' from 21 June to 05 July 2022 organised by Teaching Learning Centre, Ramanujan College, Delhi University in collaboration with Newman College, Kerala, under the aegis of Ministry of Education PMMMNMTT.



Name of the Faculty/Researcher- Dr. Saikat Banerjee

Department of English

Email- saikatenglish2013@gmail.com

Web of Science ID- AFU-2982-2022

ORCID ID- 0000-0003-2756-8643



- **Total Number of Research papers published- 02**
- **Total Number of Research Papers Presented in Seminar/Conference- 03**

Research Article - 01

Article Link: Omega Chronicles: Mapping the Landscape of Violence in Japanese Manga | Literature & Aesthetics

Title: Omega Chronicles: Mapping the Landscape of Violence in Japanese Manga

Authors: Snigdha Sarkar and Saikat Banerjee

Abstract

Influenced by the traditional Edo culture where homosexuality was prevalent, Japanese manga artists do not shy away from portraying different gender relationships explicitly through art. Among the contemporary homosexual genres of Yaoi, Yuri, Shounen-ai, and Shoujo-ai found in Japanese manga, the concept of Omegaverse, a subgenre of erotic slash fiction, has been gaining popularity. The term “omegaverse” is a combination of the words “omega” and “universe”. The omegaverse is an alternate universe where, apart from the primary gender of male and female, three other secondary genders of alpha (α), beta (β), and omega (Ω), also exists. This results in six genders in total, with each primary gender further classified into three secondary genders. The societal structure is usually based on the “wolf’s hierarchy” where alphas possess the features of alpha wolves and are considered superior. On the other hand, omegas are considered inferior and possess the ability to reproduce, irrespective of being male or female. Though there are also heterosexual and lesbian omegaverses, the term is most widely used for boys’ love genres like Yaoi and Shounen-ai, and is often referred to as a world where men can get pregnant, creating a new subgenre called Mpreg. This article focuses on understanding the dehumanizing factors of omegaverse, which strip humans of the most basic value of reason (which differentiates them from animals), using three manga, namely Kiraide Isasete, The Alpha’s Bride and Remnant Kemonohito, which cater to omegaverse boys’ love.

Keywords: Manga, Omegaverse, Alpha, Omega, Beta, Pheromones, Reason, Instinct, Secondary Sex, Rut, Heat

Research Article - 02

Article Link: Reason versus Instinct: Exploring Conflict in Korean Omegaverse Manhwa | Literature & Aesthetics

Title: Reason versus Instinct: Exploring Conflict in Korean Omegaverse Manhwa

Authors: Snigdha Sarkar and Saikat Banerjee

Abstract

As the popularity of homosexual tropes exploded in Japanese manga during the late 1990s and early 2000s, the Korean manhwa industry, second only to the Japanese, experienced an influx of these genres. Among these genres, the omegaverse sub-genre has been gradually gaining popularity among domestic as well as international readers. Omegaverse narratives are based in an alternate reality where the stereotypical male-female gender binary is deconstructed. Instead, males and females are further divided into three genders of alpha (α), beta (β), and omega (Ω), resulting in a total of six genders. The omegaverse society follows the 'wolf's hierarchy' where alphas dictate the norm and exploit omegas. Even though omegaverse can be used to present lesbian as well as heterosexual tropes, gay male omegaverse narratives continue to be the most popular ones among them. This article focuses on understanding the conflict between reason and instinct that is often represented in omegaverse narratives, through a study of three omegaverse manhwa, namely Gold Gray, Unromantic, and Love is an Illusion.

Keywords: *Manhwa, Omegaverse, Alpha, Omega, Beta, Pheromones, Reason, Instinct, Secondary Sex, Rut, Heat*

Research Papers Published in International Conferences

Conference - 01

Conference Title: *Mahābhārata Epic Across Asia: Ancient Indian Knowledge System Transcending Spatio-Temporal Boundaries* Sponsored by ICSSR, organized by Department of English Literature, The English and Foreign Languages University (A Central University), Hyderabad from 29 – 31 May, 2025

Paper Presentation Title: *Mythical Marvels on Screen: A Comparative Study of B.R. Chopra's and Siddharth Kumar Tewary's Cinematic Tapestry of the Mahabharata*

Presented and Authored By: Dr. Saikat Banerjee

Abstract

This research paper examines and compares the cinematic presentations of the Mahabharata by B.R. Chopra (1988) and Siddharth Kumar Tewary (2013) to explore their narrative structures, character portrayals, visual presentations, cultural interpretations, and overall impact. The adaptations of the Mahabharata by these renowned directors have left a significant imprint on Indian television and popular culture, making them valuable subjects for analysis and comparison. The introduction sets the stage by highlighting the enduring significance of the Mahabharata as a timeless epic and its continuous adaptation in various artistic forms. It establishes the research questions that guide the study, focusing on narrative structure, character development, visual presentation, cultural authenticity, and reception. These questions provide a framework for analyzing the adaptations and drawing meaningful insights. The methodology section describes the research approach, which involves a comparative analysis of primary and secondary sources. The primary sources are the television series adaptations themselves, while secondary sources include scholarly articles, critical essays, and reviews. The comparative analysis method enables a systematic examination of key aspects of the adaptations, including narrative structure, character development, visual presentation, cultural authenticity, and thematic interpretations. The paper outlines the significance of this research in contributing to film studies, cultural studies, and literary analysis. By critically evaluating the creative choices and cultural implications of these adaptations, the study sheds light on the transformative potential of reimagining ancient epics for the cinematic medium. It also highlights the role of cultural heritage and mythology in shaping artistic expressions and fostering dialogue between past and present. In conclusion, this research paper aims to provide a comprehensive analysis of B.R. Chopra's (1988) and Siddharth Kumar Tewary's (2013) cinematic adaptations of the Mahabharata. The comparative analysis

explores narrative structures, character portrayals, visual presentations, cultural interpretations, and reception. By examining these aspects, the research offers valuable insights into the creative choices, cultural significance, and transformative potential of adapting ancient epics for contemporary cinematic presentations. This analysis contributes to our understanding of the artistic, cultural, and social dimensions of the Mahabharata's adaptations, underscoring their enduring impact on popular culture and storytelling.

Keywords: Mahabharata, B.R. Chopra, Siddharth Kumar Tewary, cinematic presentations, narrative structure, character portrayal, visual presentation, cultural authenticity, comparative analysis, cultural heritage, mythology, transformative potential, ancient epics, popular culture, reception, significance.

Conference: 02-

Conference Title: Interweaving Anthropology, Science and Narrative: Postanthropocentric Mappings in the era of Climate Crisis Organised by Department of Humanities and Social Sciences IIT, Kharagpur from 01-03 November 2023

Paper Presentation Title: Beyond Anthropocentrism: Earth-Centric Postanthropocentrism and the Climate Crisis in Kolbert's *The Sixth Extinction*

Presented and Authored By: Dr. Saikat Banerjee

Abstract

In an epoch characterized by unprecedented ecological challenges, humanity faces an existential imperative to reimagine its relationship with the natural world. The climate crisis, fueled predominantly by anthropogenic activities, has propelled us into an era where the traditional anthropocentric paradigm no longer suffices. This research paper delves into the compelling concept of postanthropocentric mappings, harnessing the profound insights gleaned from Elizabeth Kolbert's groundbreaking work, "*The Sixth Extinction*." Kolbert's "*The Sixth Extinction*" presents a sobering account of the ongoing mass extinction event, revealing the catastrophic implications of human actions on global biodiversity. The book serves as an alarm bell, prompting an essential discourse on postanthropocentric mappings. At its core, this discourse advocates for a move beyond the anthropocentric perspective, wherein humans are considered the central and dominant force shaping the planet. Instead, it encourages a holistic worldview, acknowledging the interconnectedness and interdependence of all life forms and natural systems. It seeks to highlight the urgent need to shift away from anthropocentrism and embrace a more holistic understanding of our relationship with the environment in the face of the escalating climate crisis. Through an intricate exploration of philosophy, ethics, and practicality, this paper presents a persuasive argument for the adoption of postanthropocentrism as an essential framework for navigating the intricate tapestry of the climate crisis.

Keywords: *Postanthropocentrism, climate crisis, The Sixth Extinction, ecological resilience, environmental ethics*

Conference: 03

Conference Title: Navigating Sustainable Futures: Literary Reflections on Precarious Lives and the Anthropocene Organised by Department of Humanities and Social Sciences, IIT Patna and School of Liberal Arts, Bennett University (Greater Noida) in association with the University of Toronto (Canada), University of Northampton (UK), Aarhus University (Denmark), and University of York (UK) from 24th to 25th February 2024

Paper Presentation Title: Whispers in the Wood: An Eco-Critical Exploration of *The Overstory* and the Anthropocene

Abstract

Richard Powers' novel, *The Overstory*, unfolds as a profound narrative that intricately explores the multifaceted dimensions of the Anthropocene epoch. This research paper delves into the novel's portrayal of the Anthropocene, a geological era defined by unprecedented human impact on the environment. Through a meticulous examination of characters, themes, and narrative structures, the study unveils how Powers weaves together a tapestry that encapsulates the essence of our ecological moment. *The Overstory* serves as a literary lens through which to examine humanity's complex relationship with nature. The paper engages with the novel's diverse characters, each bound by a unique connection to trees, serving as symbols of resilience and interconnectedness. Dr. Patricia Westerford's scientific insights illuminate the profound symbiosis between humans and the natural world, challenging conventional anthropocentric perspectives and urging readers to reconsider their roles as stewards of the Earth. Drawing on a comprehensive literature review encompassing environmental studies and ecocriticism, this research situates *The Overstory* within the broader context of eco-fiction. The novel emerges as a significant contribution to this genre, facilitating a nuanced exploration of the Anthropocene's challenges and possibilities. The paper also scrutinizes the novel's depiction of human agency and environmental activism, examining characters who embark on journeys of ecological advocacy, portraying a narrative of hope and collective responsibility. As the narrative unfolds, the study investigates the novel's thematic elements of crisis and redemption. Characters like Olivia Vandergriff embody transformative journeys, offering a glimpse into the potential for personal and societal redemption amidst environmental degradation. Through this exploration, the paper contributes to the ongoing discourse surrounding environmental literature and its pivotal role in fostering ecological awareness during the Anthropocene era.

Keywords: *The Overstory, Anthropocene, Eco-fiction, Human–nature relationship, Environmental activism*

Name of the Faculty/Researcher- **Dr. Jai Prakash Pandey**

Department of Hindi

Email- jpppranchi@gmail.com

Total Number of Book Published-

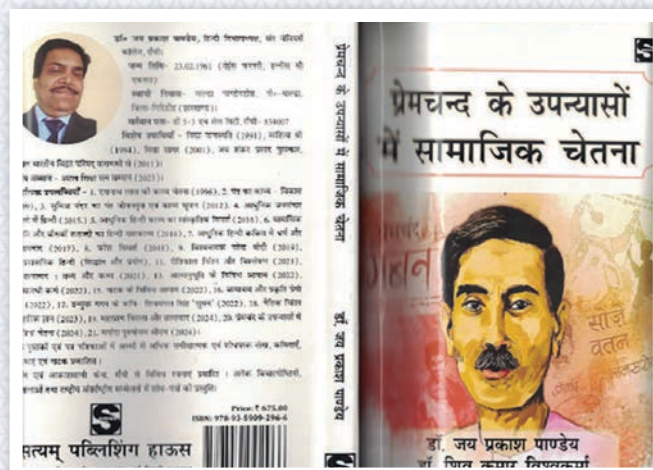
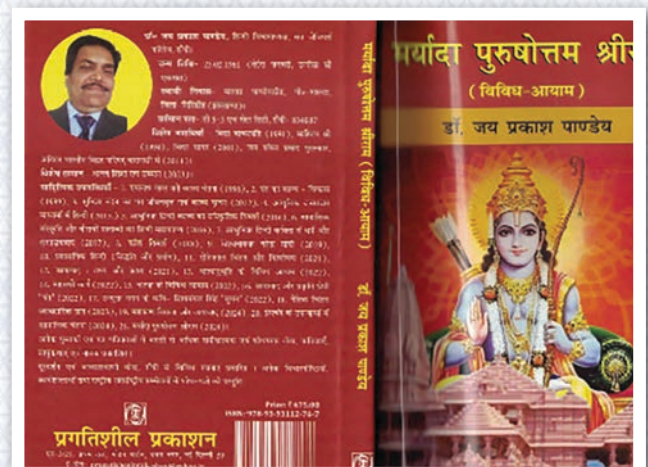
Book 1

मर्यादा पुरुषोत्तम श्रीराम (2024)

- पुस्तक का नाम: मर्यादा पुरुषोत्तम श्रीराम (विविध आयाम)
- लेखक: डॉ. जय प्रकाश पाण्डेय
- प्रकाशक: प्रगतिशील प्रकाशन
- विषय: भारतीय संस्कृति, सभ्यता और दर्शन पर आधारित राम कथा और श्री राम के जीवन से जुड़े विभिन्न पहलुओं का विस्तृत विश्लेषण.
- ISBN-13: 9789393112767

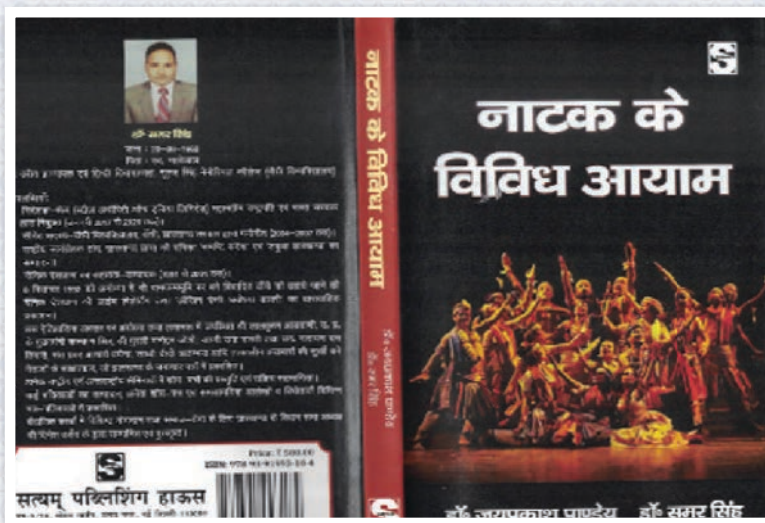
Book 2

- पुस्तक का नाम: प्रेमचंद के उपन्यासों में सामाजिक चेतना (2024)
- लेखक: डॉ. जय प्रकाश पाण्डेय



Book 3

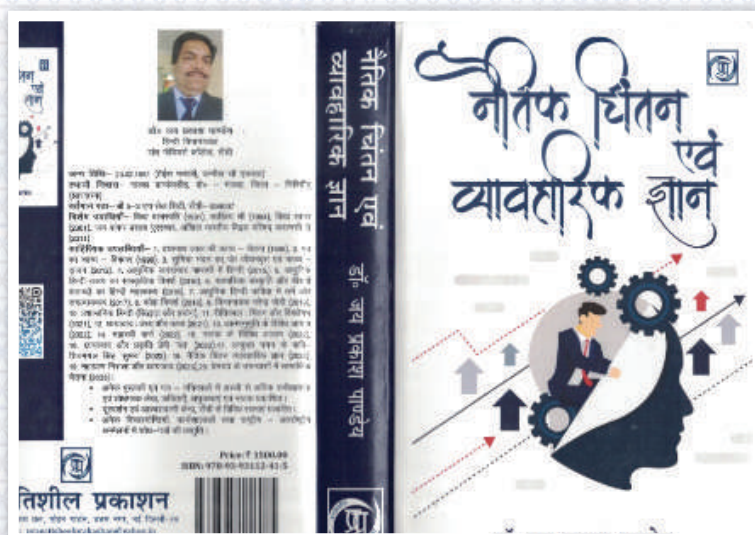
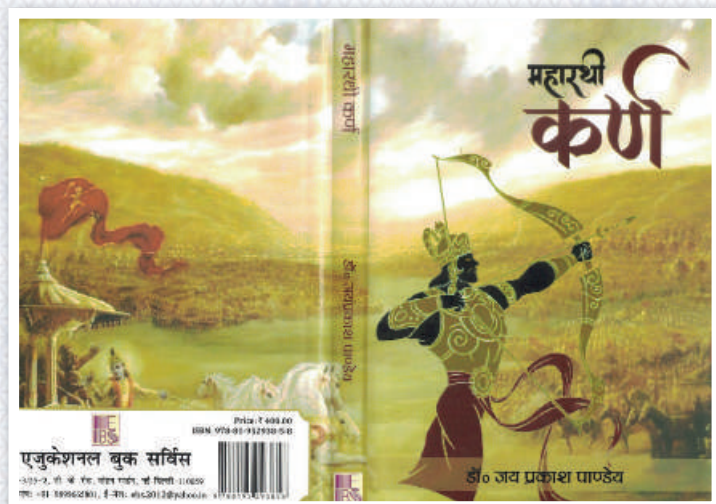
- आत्मानुभूति के विविध आयाम (2022)

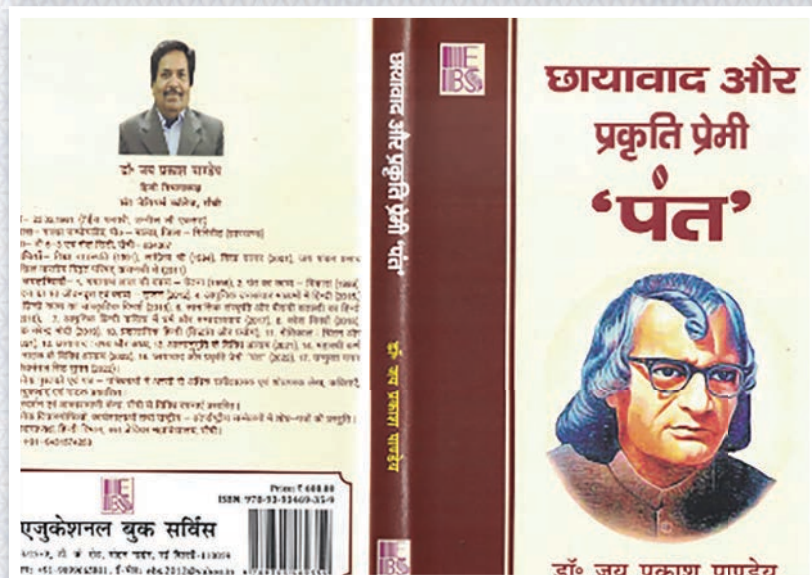
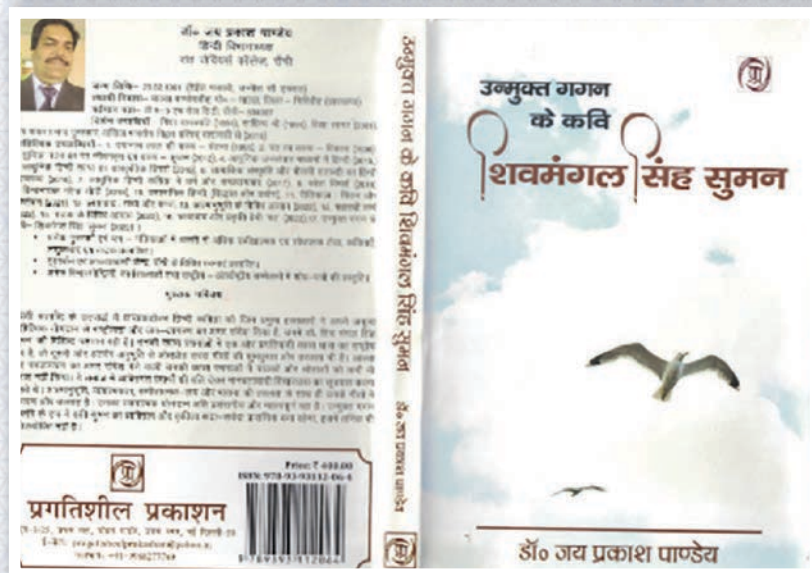
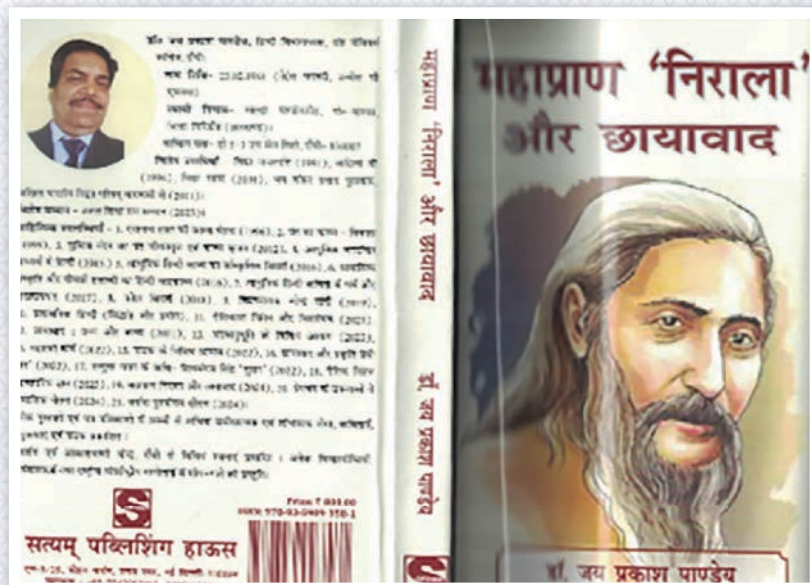


Book 4

महारथी कर्ण (2022)

- नाटक के विविध आयाम (2022)
- छायावाद और प्रकृति प्रेमी 'पंत' (2022)
- उन्मुक्त गगन के कवि शिवमंगल सिंह 'सुमन' (2022)
- नैतिक चिंतन व्यावहारिक ज्ञान (2023)
- महाप्राण निराला और छायावाद (2024)



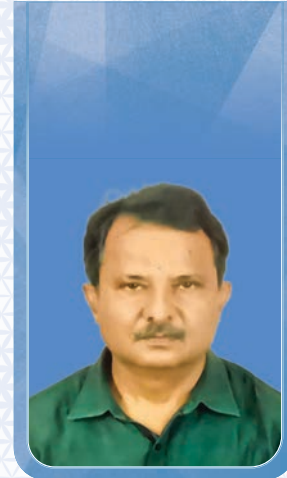


Science - Natural and allied



Name of the Faculty/Researcher - **Dr. Ajay Kumar Srivastava**

Department of Botany



- Total Number of Research paper published - 04
- Number of New Ph.D. Candidate registration - 04
- Number of Ph.D. Submission - 04

Research article - 01

Jessica Rene Hansdah & Ajay Kumar Srivastava; Leaf architecture of *Pisum sativum* L. and *Dalbergia sissoo* Roxb. of family Fabaceae Lindl, The Biobrio, 10 (3&4): 1088-1091, 2023

Leaf architecture of *Pisum sativum* L. and *Dalbergia sissoo* Roxb. of family Fabaceae Lindl

Jessica Rene Hansdah¹ & Ajay Kumar Srivastava²

1. Department of Botany, Ranchi University, Ranchi, Jharkhand, India
2. Department of Botany, St. Xavier's College Ranchi, Jharkhand, India

Abstract

Plant taxonomy is based upon identification, classification and nomenclature of plants. There are various methods to achieve these three basic goals of plant taxonomy, leaf architecture being one of the most important ways. Plants usually have their reproductive phase for only a very short period of time but most keys require them to be in flowering or fruting state in order to be classified and identified. Leaf architecture may be an important breakthrough to help identify plants in any season and help pace up the related research works.

Keywords- Leaf architecture, *Pisum sativum* L., *Dalbergia sissoo* Roxb. , Fabaceae Lindl.

Research article - 02

Jessica Rene Hansdah & Ajay Kumar Srivastava; Micromorphological and Macromorphological studies on leaves of *Butea monosperma* (Lam.) Taub., *Dalbergia sissoo* Roxb., *Phaseolus vulgaris* L. and *Pisum sativum* L. of subfamily Faboideae of family Fabaceae Lindl, The Biobrio, 11 (1&2): 1190-1193, 2024.

Micromorphological and Macromorphological studies on leaves of *Butea monosperma* (Lam.) Taub., *Dalbergia sissoo* Roxb., *Phaseolus vulgaris* L. and *Pisum sativum* L. of subfamily Faboideae of family Fabaceae Lindl

Jessica Rene Hansdah¹ & Ajay Kumar Srivastava²

1. Department of Botany, Ranchi University, Ranchi, Jharkhand, India
2. Department of Botany, St. Xavier's College Ranchi, Jharkhand, India

Abstract

Plant taxonomy is a branch of botany that deals with identification, classification and nomenclature of plants. All the four genus discussed in this paper belong to subfamily Faboideae according to the APG IV classification. Most taxonomic keys that are available for Family Fabaceae Lindl. are based on

floral characters for which plants will have to be in their reproductive phase. Flowering phase for most members of the concerned family lasts for a maximum of four months, therefore the plant is mostly found in its vegetative phase and lack of a taxonomic key solely based on vegetative characters can delay the identification process. The solution to this could be achieved by developing a valid taxonomic key using leafmorphological characters. Studies incorporating the varied and unique architecture of each leaf or leaflet may prove to be an important breakthrough to help identify plants in any season and help pace up the related research works. These can also provide adequate information in paleobotanical fields concerning fossils discovered in the form of leaves. Comparison of tree constructed based on the cladistics with the molecular key may help validate the results.

Keywords- *Leaf morphology, Butea monosperma (Lam.) Taub., Dalbergia sissoo Roxb., Phaseolus vulgaris L., Pisum sativum L., Faboideae, Fabaceae Lindl.*

Research article - 03

Rima Julie Bhaunra*, Ajay Kumar Srivastava, Prabhat Kennedy Soreng; Ethnomedicinal plants used by tribals for typhoid in Ranchi district of Jharkhand, India, *International Journal of Botany Studies*, Volume 9, Issue 9, 2024, Page No. 54-58

Ethnomedicinal plants used by tribals for typhoid in Ranchi district of Jharkhand, India

Rima Julie Bhaunra^{1*}, Ajay Kumar Srivastava², Prabhat Kennedy Soreng²

1. Department of Botany, Ranchi University, Ranchi, Jharkhand, India
2. Department of Botany, St. Xavier's College Ranchi, Jharkhand, India

Abstract

Ranchi is located in Jharkhand state. The total area is 5097 sq.km. Jharkhand is a homeland of 32 tribes including eight primitive tribes. Tribal communities living in biodiversity rich areas possess a wealth of knowledge on the utilization and conservation of medicinal plants. They have developed this traditional knowledge over several years of observations, trial and error, inference and inheritance. Some of the indigenous technologies are really effective, much cheaper than modern medicines, prepared by locally available natural resources and easy to prepare. Ethnobotanical inventories are made by conducting interviews with the tribal people, formal surveys in the field, collection and identification of plant specimen used. The information on medicinal plants was gathered from experienced tribal vaidyas which are being used as preventive against typhoid

Research article - 04

Rima Julie Bhaunra*, Ajay Kumar Srivastava, Prabhat Kennedy Soreng; Ethnomedicinal plants used by tribals for typhoid in Ranchi district of Jharkhand, India, *International Journal of Botany Studies*, Volume 9, Issue 9, 2024, Page No. 54-58

SCREENING OF PHYTOCHEMICAL CONSTITUENTS AND GC-MS STUDY OF VITEX NEGUNDO L., USED AS AN ANTI-TYPHOID PLANT IN SOME AREAS OF JHARKHAND

Rima Julie Bhaunra^{1*}, Ajay Kumar Srivastava²

1. Department of Botany, Ranchi University, Ranchi, Jharkhand, India
2. Department of Botany, St. Xavier's College Ranchi, Jharkhand, India

Abstract

Indigenous populations the world over, use plants as an important healthcare resource and remedies for different diseases. *Vitex negundo* L.(family: Verbenaceae) is a widely used plant in folk medicine. This study was aimed to perform the preliminary phytochemical and GC-MS analysis of *Vitex negundo* L. which is responsible for its pharmacological properties. The extract was subjected to qualitative phytochemical screening using standard procedures. Results show that eleven of twelve phytochemicals screened for were present. They are alkaloids, flavonoids, saponins, steroids, phenols, tannins, carbohydrates, glycosides, proteins, terpenoids and phlobatannins. The GC-MS analysis of the *Vitex negundo* L. leaves ethanol extract revealed that Hexadecanoic acid, 2-hydroxy-1-(hydroxymethyl) ethyl ester was the major compounds, with an area of 31.42%. The diversity of phytochemicals found present suggests that *Vitex negundo* L. may serve as a source of useful drugs. Thus, our results encourage the potential use of *Vitex negundo* L. as a medicinal product.

Ph.D. Supervision

Sl No	Name of Research Scholar	Date of Registration	Topic of Ph.D.	Status
1	Ms Jessica Rene Hansdah	2019	Studies On Classical And Molecular Taxonomy Of Certain Members Of Family Fabaceae	Ongoing
2	Ms Swarnima Jha	2020	Physiological Studies Of Some Bryophytes And Their Application On Seed Germination Of Semi-Arid Crops Of South Chhotanagpur, Jharkhand	Ongoing
3	Ms Rima Julie Bhaunwra (Burm.f.)Wall. Ex Nees , Cassia fistula L., Nyctanthes arbortristis L., Vitex negundo L.	2020	A Comparative Study of Phytochemicals and Anti-Typhoid Activity of Leaf Extracts of Adhatoda vasica Nees , Andrographis paniculata	Ongoing
4	Ms Sunidhi Verma	2024	Analysis of Phytochemicals, Antifungal and Anti bacterial properties in selected Lac host plants in Ranchi district.	Ongoing

Name of the Faculty/Researcher- Dr. Prabhat Kennedy Soreng

Department of Botany

Email- kenprabhat@gmail.com



Research article-01-

Rima Julie Bhaunra*, Ajay Kumar Srivastava, Prabhat Kennedy Soreng; Ethnomedicinal plants used by tribals for typhoid in Ranchi district of Jharkhand, India, *International Journal of Botany Studies*, Volume 9, Issue 9, 2024, Page No. 54-58

Ethnomedicinal plants used by tribals for typhoid in the Ranchi district of Jharkhand, India

Rima Julie Bhaunra^{1*}, Ajay Kumar Srivastava², Prabhat Kennedy Soreng²

1. Department of Botany, Ranchi University, Ranchi, Jharkhand, India
2. Department of Botany, St. Xavier's College, Ranchi, Jharkhand, India

Abstract

Ranchi is located in Jharkhand state. The total area is 5097 sq.km. Jharkhand is a homeland of 32 tribes including eight primitive tribes. Tribal communities living in biodiversity rich areas possess a wealth of knowledge on the utilization and conservation of medicinal plants. They have developed this traditional knowledge over several years of observations, trial and error, inference and inheritance. Some of the indigenous technologies are really effective, much cheaper than modern medicines, prepared by locally available natural resources and easy to prepare. Ethnobotanical inventories are made by conducting interviews with the tribal people, formal surveys in the field, collection and identification of plant specimen used. The information on medicinal plants was gathered from experienced tribal vaidyas which are being used as preventive against typhoid

Name of the Faculty/Researcher – Dr Ushir Ranjan Sen

Department of Chemistry

Associate Professor

Email- ushirranjansen@gmail.com



Research article-01

Mohammad Adnan Khan, Ushir Ranjan Sen, Sahanwaj Khan, Swaraj Sengupta, Sonal Shruti & Subhendu Naskar; Manganese based Molecular Water Oxidation Catalyst: From Natural to Artificial Photosynthesis, Comments on Inorganic Chemistry, 43:3, 223-256, **Publisher: Taylor & Francis**

Manganese based Molecular Water Oxidation Catalyst: From Natural to Artificial Photosynthesis

**Mohammad Adnan Khan¹, Ushir Ranjan Sen², Sahanwaj Khan¹, Swaraj Sengupta³,
Sonal Shruti¹ & Subhendu Naskar¹**

1. Department of Chemistry, Birla Institute of Technology-Mesra, Ranchi, India
2. Department of Chemistry, St. Xavier's College, Ranchi, India
3. Department of Chemical Engineering, Birla Institute of Technology, Mesra, Ranchi, India

Abstract

As a product of photosynthesis, the storable chemical energy in the form of carbohydrates inspires the people engaged in renewable energy research to mimic the natural process. This may be the reduction of the proton or carbon dioxide to produced fuels e.g., hydrogen or CH₄ and CH₃OH or other chemical feed stocks e.g., HCOOH, CO₃²⁻, (COOH)₂. This replication of the natural process is known as Artificial Photosynthesis. In either case water oxidation is mandatory. Herein, we discuss brief mechanism of photosynthesis, emphasizing the role of Water Oxidation Catalyst (WOC). Literature on Manganese based WOC is presented with their characteristic features.

Keywords : *artificial photosynthesis; Kok cycle; water oxidation complex; Z scheme; manganese complex*

Research Article -2-

Global Journal of Engineering and Sciences Science (ISSN 2348-8034, Impact factor - 5.070), 2025

Investigation of electrode metals and supporting electrolytes in the electrochemical polymerization of acrylamide.

Sumanta K. Sengupta*, Praween Surin, Mamta Mahima Topno, Smita Singh

Faculty of Science, Gossner College Ranchi, 834001, India.

Ushir R. Sen, Faculty of Science, St. Xaviers College, Ranchi, 834001, India.

Corresponding author e-mail: sksengupta2006@gmail.com

Abstract

The electrochemical polymerization of acrylamide in N, N-dimethyl formamide was carried out using electrode of different metals and with different supporting electrolytes. Maximum polymer yield was obtained when Zn metal, was used as an electrode. Similarly, among the different tetra alkylammonium, or phosphonium halide used as the supporting electrolyte, the yield was

maximum with tetrabutylammoniumhexachloroantimonate. The effects of, electrode metals and nature of supporting electrolytes on the polymer yield was, investigated.

Keywords: *Acrylamide, Electrode metal, Supporting electrolyte, Electrochemical polymerization*

Name of the Faculty/Researcher: **Dr. Harendra Nath Kumar**

Department of Chemistry

ORCID ID- 0009-0005-3704-1249



- Total Number of Research Papers Presented in Seminar/Conference – 2

Conference paper presentation-01: Dr. Harendra Nath

Kumar; Preparation and analysis of some heteropoly oxometallates.

Preparation and analysis of some heteropoly oxometallates

Harendra Nath Kumar

Assistant Professor, Department of Chemistry, St. Xavier's College, Ranchi

Abstract

The present communication deals with the synthesis and characterization of some new inorganic condensation polymer of tungsten with cobalt and iron as heteroatoms. The studies on the condition of formation, properties and analysis of Sodium 10-tungsto 2-cobaltoferrate III $\text{Na}_{13}[\text{FeCo}_2\text{W}_{10}\text{O}_{40}] \cdot 32\text{H}_2\text{O}$ and potassium 10-tungsto 2-cobaltoferrate III $\text{K}_3[\text{FeCo}_2\text{W}_{10}\text{O}_{40}] \cdot 34\text{H}_2\text{O}$. Compound have been carried out by pH measurement, thermometric titration, Chemical and emission spectral method. The compound was finally characterized by UV-visible, infrared (IR), differential thermal analysis (DTA), Thermogravimetric analysis (TGA) and differential thermogravimetric analysis (DTG) and X-RAY diffraction pattern. The preliminary of X-RAY diffraction studies confirm that the crystal to be orthorhombic having space group Pmcn with $a = 17.85\text{\AA}$ $b = 18.65\text{\AA}$; $c = 21.67\text{\AA}$ $V = 7213.58\text{\AA}^3$; $z = 4$; $D_c = 2.35\text{ g cm}^{-3}$

Keywords- *Mixed oxide, polyoxotungstate, heteropoly oxometallates, thermal analysis*

Conference/Seminar

- Participated and presented a paper entitled “**Preparation and analysis of some heteropoly oxometallates**” in the two-day international conference and symposium from 30th November to 1st December 2024, organized, Marwari College, Ranchi, Jharkhand, India.
- Participated and presented a paper entitled “**Synthesis and characterisation of Sodium and Potassium Salt of 10-MOLYBDO 2-VANADOTANTALATE**” at the Three-day international conference from 20 to 22 January 2024, organised by the St Department of Physics, St. Xavier's College, Ranchi, Jharkhand, India.

Name of the Faculty/Researcher- Dr. Sushil Kumar Pandey

Department of Chemistry

ORCID ID- 0009-0007-1779-9954



1. **Total Number of Research papers published- 1**
2. **Total Number of Research Papers Presented in Seminar/Conference- 1**

Research article - 01

Joydip Dutta; Sujeet Singh; **Sushil Pandey**; Mitesh Chakraborty; Examination of the structural and upconversion phenomenon in ZnWO₄ : Er³⁺ phosphors, The AIP Conf. Proc. 3196, 050003 (2024)

Examination of the Structural and Upconversion Phenomenon in ZnWO₄: Er³⁺ Phosphors

Joydip Dutta¹, Sujeet Singh², Sushil Pandey³ and Mitesh Chakraborty⁴

1. Institute Post-Doctoral Fellow, Central Research Facility, Indian Institute of Technology (Indian School of Mines) Dhanbad-826004, Jharkhand, India
2. Department of Physics, Indian Institute of Engineering Science and Technology, Shibpur- 711103, West Bengal, India.
3. Department of Chemistry, St. Xavier's College, Ranchi -834001, Jharkhand, India.
4. Department of Physics, St. Xavier's College, Ranchi -834001, Jharkhand, India.

Abstract

In the present study, Er³⁺ doped ZnWO₄ phosphors were prepared at different concentrations using the solid-state reaction method. The phase and lattice parameters have been investigated using X-ray diffraction analysis. The frequency upconversion (UC) emission spectra of the prepared samples has been observed in the 450 nm to 700 nm wavelength region. We have observed three UC emission bands peaking near ~524 nm (green), ~ 549 nm (green) and ~ 656 nm (red) related to the ²H_{11/2} → ⁴I_{15/2}, ⁴S_{3/2} → ⁴I_{15/2} and ⁴F_{9/2} → ⁴I_{15/2} transitions, respectively. The emission spectra of the Er³⁺ doped phosphor are represented using an energy level diagram. Based on UC emission intensity, it can be said that the prepared phosphors can be applied in green-emitting display devices

Conference/Seminar

- Participated and presented a paper entitled “**Electrical measurement of a newly synthesized high temperature high entropy ceramic: Ba(Ti_{0.2}Zr_{0.2}Hf_{0.2}Sn_{0.2}Ce_{0.2})O₃**” in the Three-day international conference named “**Recent Trends in Materials Science & Devices (ICRTMD 2025)**”, from 24th March to 26th March 2023, organize by JVMGRR College, Charkhi Dadri, Haryana, India.

Name of the Faculty- Dr. Reman Kumar Singh

Department of Chemistry

Email- reman_sxc@sxcran.org

Web of Science ID- IUQ-0475-2023

ORCID ID- 0000-0001-6160-4586

Scopus ID- 56048330600



1. Total Number of Research Papers Published – 02

2. Total Number of Research Papers Presented in Seminar/Conference – 02

Research article- 01

Singh, Reman Kumar; Patwari, G Naresh; Dissociation of endohedrally encapsulated HCl/HBr in C60 and C70: an electric field perspective, The Journal of Physical Chemistry B-127, 17, 3888-3893 (2023), Publisher: American Chemical Society.

Dissociation of Endohedrally Encapsulated HCl/HBr in C60 and C70: an Electric Field Perspective

Reman Kumar Singh¹, G Naresh Patwari²

1. Assistant Professor, Department of Chemistry, St. Xavier's College, Ranchi

2. Professor, Department of Chemistry, IIT Bombay, Powai, Maharashtra

Abstract

The ability of an acid to undergo dissociation depends primarily on the nature of the solvent and especially the arrangement of the solvent molecules around the protic group. This process of acid dissociation can be promoted by confining the solute-solvent system to nanocavities. Endohedral confinement of HCl/HBr complexed with a single ammonia or a water dimer within the C60/C70 cage results in the dissociation of mineral acid. Such confinement bolsters the electric field along the H-X bond and consequently lowers the minimum number of solvent molecules required in the gas phase for the acid dissociation.

Keywords: *Electric Field, Proton Transfer, Cage, C60, and C70, Phenol, Ammonia.*

Research article 02

Kambekar, Aniruddha; Nandhagopal, Vignesh; Mehta, Aditya; Kumar, Yashwant; **Singh, Reman Kumar;** Pushpavanam, Karthik; Aqueous two-phase system enabled dual-layered hydrogels with tunable nanoparticle localization, ACS Applied Polymer Materials, 2025, 7, 15, 10062–10073, **Publisher: American Chemical Society.**

Aqueous Two-Phase System Enabled Dual-Layered Hydrogels with Tunable Nanoparticle Localization

Aniruddha Kambekar¹, Vignesh Nandhagopal¹, Aditya Mehta¹, Yashwant Kumar¹,
Reman Kumar Singh², Karthik Pushpavanam¹

1. Professor, Department of Chemistry, IIT Gandhinagar, Gujarat.
2. Assistant Professor, Department of Chemistry, St. Xavier's College, Ranchi.

Abstract

Hydrogels are cross-linked polymeric networks capable of absorbing large amounts of water and have been widely explored for applications in drug delivery, tissue engineering, biosensing, and environmental remediation. The recent development of dual-layered hydrogels (DLHs) has expanded their potential, enabling spatial control over their mechanical and chemical properties. Furthermore, incorporating nanoparticles into each of these layers introduces unique optical, electronic, or catalytic properties, expanding the scope of these materials. However, complex processes often hinder the fabrication of DLHs, requiring precise control over the reaction conditions. This poses challenges in achieving a uniform nanoparticle distribution without aggregation. This work presents an approach for synthesizing DLHs with an aqueous two-phase system (ATPS), integrating phase separation and selective nanoparticle localization, followed by subsequent polymerization. Using a model system of poly(ethylene glycol) (PEG) and dextran (DEX) to generate the ATPS, we combined acrylamide, bis(acrylamide), and Irgacure (photoinitiator) to fabricate DLHs. Rheological studies provided insights into the viscoelastic behavior of DLHs, while mercury porosimetry was employed to analyze the pore size distribution. We illustrate that citrate-capped gold nanoparticles can be localized within the PEG-rich layer, while bovine serum albumin (BSA)-capped silver nanoparticles can be localized within the DEX-rich layer. We performed molecular dynamics simulations to investigate the factors contributing to the preferential partitioning. Finally, we exploit the fabricated DLHs with localized nanoparticles to catalyze the conversion of p-nitrophenol to p-aminophenol in the presence of gold nanoparticles. Upon laser irradiation at 450 nm, the reaction rate is further enhanced due to photothermal heating induced by the silver nanoparticles. We anticipate that this process offers a fabrication route toward multifunctional DLHs with spatially organized nanoparticles, opening avenues for advanced catalytic and responsive materials.

Keyword: *aqueous two-phase system, gold nanoparticles, silver nanoparticles, dextran, polyethylene glycol, hydrogel, photothermal*

Conference/Seminar

- Participated and presented a paper entitled **"Dissociation of endohedrally encapsulated HCl/HBr in C₆₀ and C₇₀: an electric field "** in the Two-day international conference named **"Emerging Sustainable Technologies, Policies and Methodologies (IICESTPM-2023)"**, from 12th to 13th May 2023, organize by Marwari College, Ranchi.
- Participated and presented a paper entitled **"Fluorogenesis: Inducing Fluorescence in a Non-Fluorescent Protein Through Photoinduced Chromophore Transfer of a Genetically Encoded Chromophore"** at the three-day national conference named "Kaleidoscope 2024" organize by the Department of Chemistry, CSIR NCL Pune, and the Department of Chemistry, IISER Pune.

Dr. Jayant Sinha

Associate Professor

Department of Geology

Email- jayantranchi@gmail.com



1. Total Number of Research Papers Published – 03

Research Paper - 01

1. ISSN:2322-0945

Quarterly Journal of GARC Vol. 31 No. 3 September 2023, P.-97-103

Geospatial Analysis Based Watershed and Sub-Watershed Delineation of Kanchi River Sub-Basin, Khunti-Ranchi Districts, Jharkhand

Mable Martha Toppo and Dr. Jayant Sinha

Department of Geology, St. Xavier's College, Ranchi, Jharkhand, E-mail: mabletoppo@gmail.com

Abstract

Water resource management continuously demands information regarding the characteristic of watershed. Numerous watershed modeling projects gets bounded due to limited information on certain parameters such as topography which is often outdated and costly to procure. This paper is an attempt to appraise the geospatial analysis for accurate delineation of watershed and sub-watershed of Kanchi river sub-basin and its character. Geographic information systems (GIS), coupled with increased spatial data availability allows to obtain utmost results which can contribute for watershed modeling and its prioritization. The present study entails watershed delineation based on Digital Elevation Data (DEM) data available from USGS in the ArcGIS 10.3 and manipulated to procure accurate representation of stream flow path and directions for the study area. The results obtained by using watershed analysis function in ArcGIS shows Kanchi watershed having an area of about 1023.68 sq km and 31 sub-watershed in the study area. The area delineated can be subjected to various watershed modeling programmes for the optimum use and benefit of the watershed. The study demonstrates applicability of GIS as a tool for watershed delineation which proves to be effective and efficient and can be exported to other modeling software for watershed management.

Key words: Watershed, DEM, USGS, Arc GIS

Journal of Geomatics, Vol. 18, No. 1, April 2024

Geomatics Application for Assessment of Groundwater Prospective Zones: A Case study of Kanchi River Sub Basin, Khunti-Ranchi districts, Jharkhand.

*Mable M. Toppo and Jayant Sinha**

Department of Geology, St. Xavier's College, Ranchi- 834001, *Email: mabletoppo@gmail.com

(Received on 12 April 2023; in final form 6 November 2023)

DOI: <https://doi.org/10.5855/jorge.2024.18.1.69>

Abstract

Geomatic tools have emerged effectively in identifying and delineating the drainage character and assessment of groundwater prospective zones. This study highlights the likelihood of RS-GIS technique in hydrogeological studies, particularly for delineating the groundwater prospective zones in Kanchi River Sub Basin, Khunti–Ranchi, district, Jharkhand. Integrating various hydrogeological parameters such as lithology, slope, lineament, drainage, soil, and other allied features can be fruitful in assessment of the groundwater prospect of a large area. Geologically the study area is dominated by Precambrian lithounits such as granite gneisses, pelitic schists and quartzites showing multiple phase deformation and magmatism. In present study, seven major geotechnical elements were selected such as lithology, slope, lineament, soil, geomorphology, drainage, and LULC. The thematic maps were generated by Visual Image Interpretation techniques and were integrated in GIS environment. Sources for these data were existing thematic maps, satellite images -IRS-P6, LISS-III (Date of acquisition–17th January, 2021), LANDSAT 8 OLI (Date of acquisition: 26th April 2022), SRTM (Date of acquisition – 2nd January 2015) and Survey of India top sheets i.e. 1: 50,000 scale. Five Potential zones have been demarcated using AHP weighted linear combination of the various thematic layers. The hydrogeological parameter index of the present area indicates that regions having high lineament density within dissected hills and valleys are the most promising site for groundwater occurrence. The study emphatically suggests that about 50% of the study area falls under the category of moderate to high groundwater potential. The result obtained is in conformity with the published well yield data of watersheds of Jharkhand State. The present study highlights the importance and usefulness of weighted index as a model for identification of potential groundwater zones in similar hydrogeological conditions.

Keywords: *Kanchi, RS-GIS, Groundwater Prospective Zones, Weighted Index.*

Drainage Morphometric Analysis of Kanchi River Sub-Basin, Khunti and Ranchi Districts, Jharkhand Using Remote Sensing and GIS.

Mable M. Toppo¹, Jayant Sinha² and Puja Priya³

¹ Department of Geology, St. Xavier's College, Ranchi, India.

DOI: <https://doi.org/10.56293/IJASR.2024.5917>, IJASR 2024, VOLUME 7

ISSUE 3 MAY – JUNE, ISSN: 2581-7876

Abstract

Satellite based remote sensing techniques and GIS have demonstrated their efficacy in quantitative and qualitative assessment of drainage basin. The drainage system's quantitative analysis is a crucial component of watershed characterization. Morphometry deals with mathematical quantifying of various aspects of basin. The present study focuses on the morphometric analysis of Kanchi River watershed using remote sensing and GIS approach for optimal management and planning of the basin's groundwater resources. The Kanchi River is one of the major tributaries of Subarnarekha River in eastern India. In this study SRTM (date of acquisition: 2nd January 2015) is used to extract the crucial hydrological parameters of Kanchi River in ARC GIS 10v. For morphometric analysis the study area has been divided into 21 sub watersheds based on 4th stream order and above. The linear, aerial and relief parameters have been calculated and their hydrological inferences were discussed. The drainage area of Kanchi watershed is 1023.68 sq km and the main stream of the basin is of 6th order with dendritic to sub-dendritic and parallel drainage pattern. Most of the morphometric parameters such as bifurcation ratio, drainage density, drainage texture, stream frequency, form factor, basin relief conclude that the basin is elongated in nature with high overland flow due to some structural control. The database generated by the study can provide scientific information for site selection of water recharge structures in the basin.

Keywords: *Kanchi river, Morphometry, Remote Sensing and GIS, Watershed.*

Ms. Mable M. Toppo

Assistant Professor

Department of Geology

Orcid id- 0009-0007-6197-3366

E-mail: mabletoppo@gmail.com



Research Paper - 01

1. ISSN:2322-0945

Quarterly Journal of GARC Vol. 31 No. 3 September 2023

P.-97-103

Geospatial Analysis Based Watershed and Sub-Watershed Delineation of Kanchi River Sub-Basin, Khunti-Ranchi Districts, Jharkhand

Mable Martha Toppo and Dr. Jayant Sinha

Department of Geology, St. Xavier's College, Ranchi, Jharkhand, E-mail: mabletoppo@gmail.com

Abstract

Water resource management continuously demands information regarding the characteristic of watershed. Numerous watershed modeling projects gets bounded due to limited information on certain parameters such as topography which is often outdated and costly to procure. This paper is an attempt to appraise the geospatial analysis for accurate delineation of watershed and sub-watershed of Kanchi river sub-basin and its character. Geographic information systems (GIS), coupled with increased spatial data availability allows to obtain utmost results which can contribute for watershed modeling and its prioritization. The present study entails watershed delineation based on Digital Elevation Data (DEM) data available from USGS in the ArcGIS 10.3 and manipulated to procure accurate representation of stream flow path and directions for the study area. The results obtained by using watershed analysis function in ArcGIS shows Kanchi watershed having an area of about 1023.68 sq km and 31 sub-watershed in the study area. The area delineated can be subjected to various watershed modeling programmes for the optimum use and benefit of the watershed. The study demonstrates applicability of GIS as a tool for watershed delineation which proves to be effective and efficient and can be exported to other modeling software for watershed management.

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Journal of Geomatics, Vol. 18, No. 1, April 2024

Geomatics Application for Assessment of Groundwater Prospective Zones: A Case study of Kanchi River Sub Basin, Khunti-Ranchi districts, Jharkhand.

Mable M. Toppo and Jayant Sinha*

Department of Geology, St. Xavier's College, Ranchi- 834001, *Email: mabletoppo@gmail.com

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Keywords: *Kanchi, RS-GIS, Groundwater Prospective Zones, Weighted Index.*

Drainage Morphometric Analysis of Kanchi River Sub-Basin, Khunti and Ranchi Districts, Jharkhand Using Remote Sensing and GIS.

Mable M. Toppo¹, Jayant Sinha² and Puja Priya³

¹ Department of Geology, St. Xavier's College, Ranchi, India.

DOI: <https://doi.org/10.56293/IJASR.2024.5917>, IJASR 2024, VOLUME 7

ISSUE 3 MAY – JUNE, ISSN: 2581-7876

Abstract:

Satellite based remote sensing techniques and GIS have demonstrated their efficacy in quantitative and qualitative assessment of drainage basin. The drainage system's quantitative analysis is a crucial component of watershed characterization. Morphometry deals with mathematical quantifying of various aspects of basin. The present study focuses on the morphometric analysis of Kanchi River watershed using remote sensing and GIS approach for optimal management and planning of the basin's groundwater resources. The Kanchi River is one of the major tributaries of Subarnarekha River in eastern India. In this study SRTM (date of acquisition: 2nd January 2015) is used to extract the crucial hydrological parameters of Kanchi River in ARC GIS 10v. For morphometric analysis the study area has been divided into 21 sub watersheds based on 4th stream order and above. The linear, aerial and relief parameters have been calculated and their hydrological inferences were discussed. The drainage area of Kanchi watershed is 1023.68 sq km and the main stream of the basin is of 6th order with dendritic to sub-dendritic and parallel drainage pattern. Most of the morphometric parameters such as bifurcation ratio, drainage density, drainage texture, stream frequency, form factor, basin relief conclude that the basin is elongated in nature with high overland flow due to some structural control. The database generated by the study can provide scientific information for site selection of water recharge structures in the basin.

Keywords: *Kanchi river, Morphometry, Remote Sensing and GIS, Watershed.*

Dr. Somesh Sengupta

Department of Geology

St. Xavier's College, Ranchi

ORCID: 0000-0001-9833-0371

SCOPUS ID: 57214657832



Life member professional associations –

- International Association of Hydrogeologists: Membership No. 146593
- Total Number of Research Papers Published – 02
- Total Number of Research Papers Presented in Seminar/Conference – 1
- Total Number of Books Published – 01

Research article - 01

Arun Kumar, Shwetambara Verma, Somesh Sengupta³ & M Sunil Singh^{1*}; Geotechnical Design and Rock Support Evaluation of Dimapur–Kohima Railway Tunnel, Nagaland, India, Journal of Scientific & Industrial Research, Vol. 84, March 2025, pp. 251-261

Geotechnical Design and Rock Support Evaluation of Dimapur–Kohima Railway Tunnel, Nagaland, India

Arun Kumar¹, Shwetambara Verma², Somesh Sengupta³ & M Sunil Singh^{1*}

- 1 Department of Civil Engineering, NIT Manipur, Manipur 795 004, India
- 2 Department of Civil Engineering, The Assam Kaziranga University, Assam 785 006, India
- 3 Department of Geology, St. Xavier's College, Ranchi 83 4001, India

Abstract

This study evaluates the rock support requirements for a specific tunnel design, aligning with guidelines from the Indian Railways Schedule of Dimensions for 1676 mm Broad Gauge (BG), Revised (2004), and Addendum and Corrigendum Slip (ACS) No. 26. By examining geological, geotechnical, and geo-engineering parameters along the tunnel alignment—including rock mass characteristics and in situ stress conditions—the study aims to identify optimal design and support systems. Using RocLab software, key rock mass properties like deformation modulus and shear strength were evaluated, while RS2 (Finite Element Method software) assessed primary tunnel support needs. For full-face excavation and tunnel cross sections without invert, the recommended support classes III and IV require bolts of 3–3.5 m in length and 10–15 cm shotcrete. For cross sections with invert, classes IV, V, and VI support systems are advised. The maximum observed deformation for Class VI tunnels ranged from 80–150 mm, with a yielding radius of approximately 8 m, indicating poor rock quality in this section. To mitigate deformation risks, a high-strength support system with yielding capabilities is suggested, along with pipe roofing. However, further evaluation through 3D simulations is recommended to assess the pipe roof's effects on stress and deformation. Finally, Class VII supports are proposed for their robust design, especially in areas with shallow overburden and low-stress environments, capable of managing substantial loads. This real-time study offers valuable insights for academicians and consultants focused on tunnel support assessment and related geotechnical applications.

Keywords: *Rock class, Rock support, RocLab, RS2 FEM, Tunnelling*

Research article - 02

S. Verma, and S. Sengupta, New way to shaping India's academic environment: An assessment of the mechanism of integration of education 4.0 to industry-centric learning, *Comput. Appl. Eng. Educ.* 32, (2024)

New way to shaping India's academic environment: An assessment of the mechanism of integration of education 4.0 to industry-centric learning

Shwetambara Verma¹ | Somesh Sengupta²

- 1 Department of Civil Engineering, School of Engineering and Technology, The Assam Kaziranga University, Jorhat, India
- 2 Department of Geology, St. Xavier's College, Ranchi, India

Abstract

The world around us is evolving due to Industrial Revolution 4.0. This revolution is driving the present-day education, that is, Education 3.0—creative education towards Education 4.0, that is, industry-centric education. The present academic environment in India is in the process of developing an educational ecosystem, which will incorporate equal access to education for all stakeholders and promote critical thinking, digital literacy, global awareness and scientific reasoning to name a few. Accordingly, it has become prudent to develop and validate a mechanism for assessing the various steps being taken to realign students to Education 4.0. This study involved 300 undergraduate, postgraduate, and PhD students from eight different schools across diverse program and course outcomes, who were asked to respond to a questionnaire on their own accord. The Pearson product-moment correlation test was used to statistically analyse the obtained responses. The test results showed that the questions were logical and valid, with a significance level of 0.0115. Furthermore, the reliability of the mechanism was also assessed using Cronbach's α score. This study indicated that three aspects—learning preferences, contribution of learning to knowledge, skills, and personal development, and time spent on learning and nonacademic activities—exhibited high reliability. However, two aspects—the emphasis on mental functions and reading and writing—indicated to be of moderate reliability. Thus, it could be said that the questionnaire developed in this study was both reliable and valid for assessing the mechanism being undertaken to realign students to Education 4.0.

Keywords: *Cronbach's α score, Education 4.0, Industrial Revolution 4.0, Pearson product-moment correlation*

Study of Groundwater Status and Identification of Suitable Site for Artificial Groundwater Recharge Zones in Dimapur using GIS and Remote Sensing

Dr. Shwetambara Verma^{1*}, Dr. Somesh Sengupta², Upasana Kashyap³, Tunika Hayemi⁴

¹Professor, Department of Civil Engineering, The Assam Kaziranga University, Assam, India

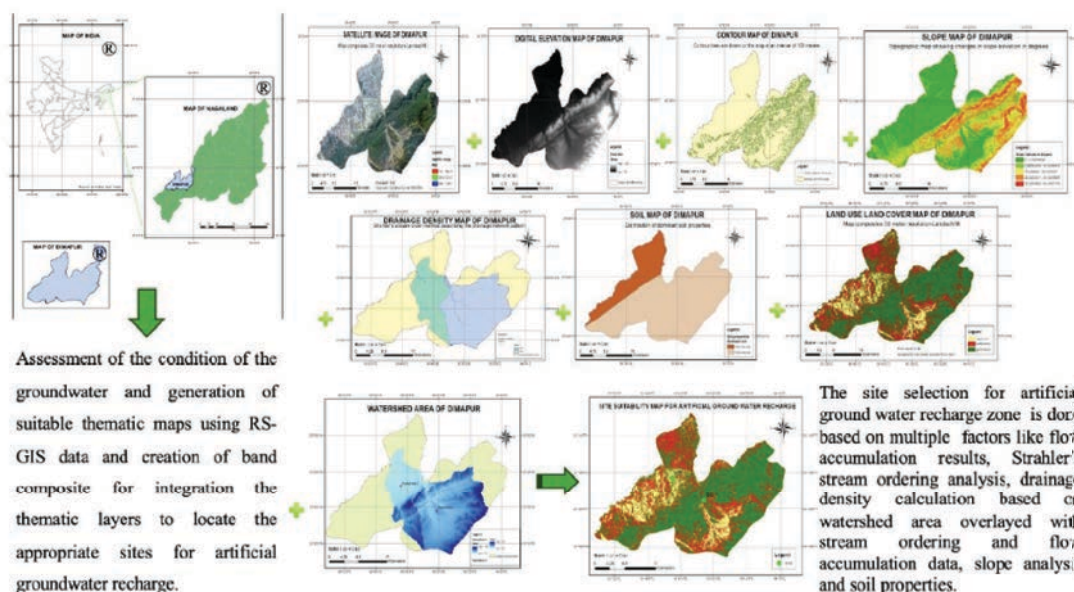
²Assistant Professor, Department of Geology, St. Xavier's College, Ranchi, India

³Assistant Professor, Department of Civil Engineering, The Assam Kaziranga University, Assam, India

⁴M.Tech Student, Department of Civil Engineering, The Assam Kaziranga University, Assam, India

Corresponding author: E-mail: shwetambara@kazirangauniversity.in; Tel.: (+91) 9821556483

Graphical Abstract

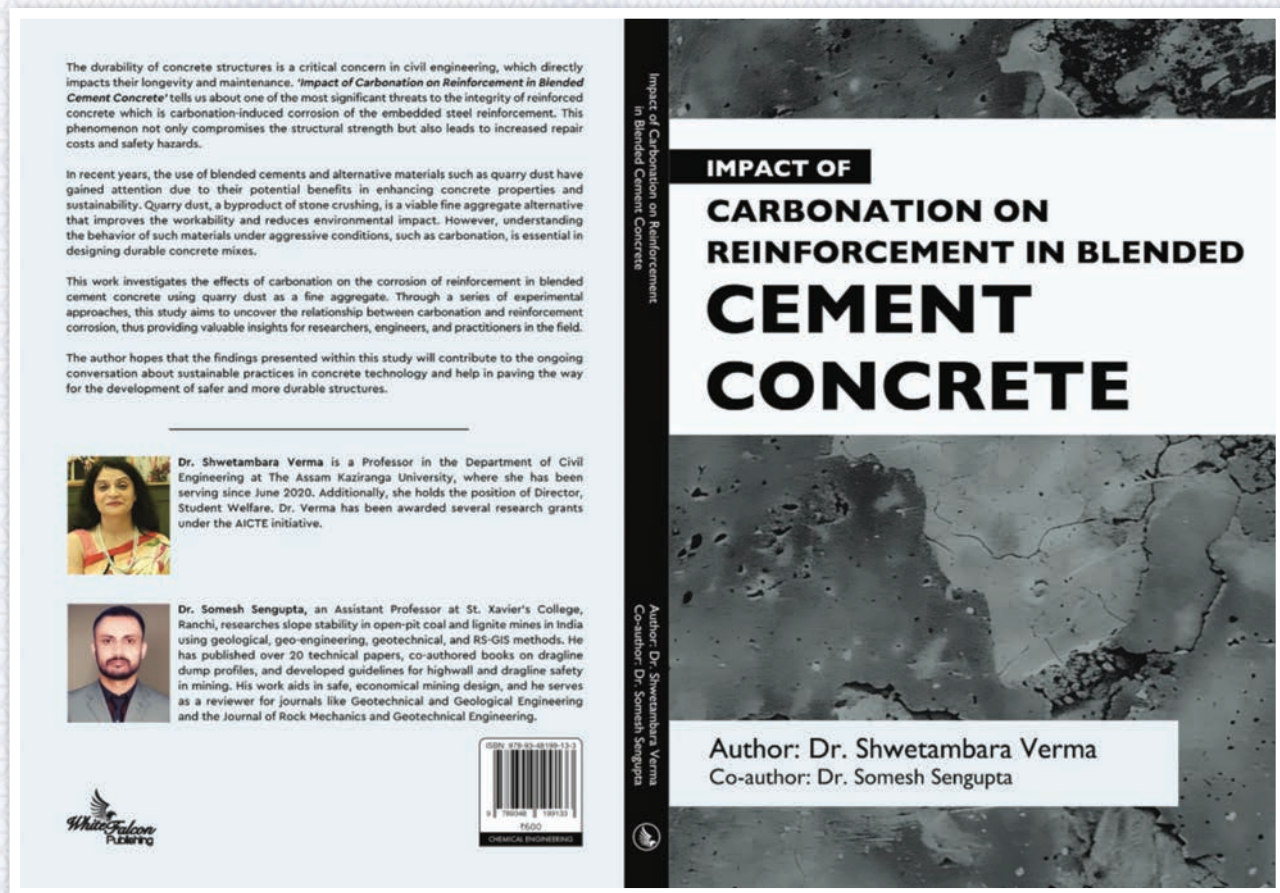


Abstract

In India, groundwater is an indispensable resource for all types of water demands and is essential to both economic and human existence. In the context of groundwater studies, the integration of remote sensing and geographic information systems has proven to be revolutionary. The need for water is growing exponentially every year, indicating a growing reliance on groundwater resources as surface water supplies become insufficient to meet the demand. Recharging artificially attempts to restore aquifers so that water can be obtained when needed. However, careful site selection is necessary for an artificial groundwater recharge to be successful. An attempt has been undertaken to assess the condition of the groundwater and find appropriate locations for an artificial groundwater recharge zone near Dimapur, where the current study has been done. A key component of managing groundwater resources sustainably is the artificial

Books Published: 1

Verma S and Sengupta S., (2024); "Impact of Carbonation on Reinforcement in Blended Cement Concrete"; published by White Falcon Publishing; ISBN: 978-93-48199-13-3.



Dr. Melvin A Ekka

Department of Geology

St. Xavier's College, Ranchi

ORCID: <https://orcid.org/0009-0002-0681-4358>

MEMBERSHIP: International Association of Hydrogeologists;

Membership No. 146594

Geological Insights: Rock Types and Structures in the Uberiya Shear Zone

Sreyasi Ray*1, Dr. Somesh Sengupta2, Dr. Melvin A. Ekka3



Abstract

Shear zones are localized regions of higher strain that accommodate differential movement in the Earth's crust during lithospheric deformation. These zones, which can be planar to curvilinear, range from brittle and brittle-ductile to ductile in nature. They are characterized by intense deformation due to significant stress, distinguishing them from the surrounding less deformed rocks. The Uberiya shear zone, located in the Namkum block of Ranchi district, Jharkhand, India, is a discrete, linear, ductile shear zone trending generally east-west (E-W). This zone is distinguished by the absence of shearing evidence in its vicinity. The Uberiya shear zone is situated within the area covered by Survey of India OSM No. F45B7. The Uberiya shear zone is a high-strain zone that dips southward and is clearly demarcated by relatively weakly foliated rocks on both its northern and southern boundaries. It cuts across a meta-sedimentary rocks, including mica schist, garnetiferous muscovite schist, quartz-biotite-sericite schist, and quartzite, all of which are intruded by pegmatites and quartz veins. This shear zone represents an area of highly metamorphosed and deformed rock exposures, characterized by strongly developed foliation planes and the presence of high-grade minerals such as garnet, indicative of medium- to high-grade metamorphism. The intensity of deformation increases progressively from the eastern side of the exposure through the central region to the western end, as evidenced by more pronounced foliation planes and an increase in the density and intensity of C-surfaces. Kinematic indicators in this shear zone, which provide insights into the direction and sense of shear movement, include S-C fabrics characterized by foliation surfaces and shear surfaces, boudins and asymmetric boudins, pressure shadows, and sigmoidal structures where intruded veins have developed a characteristic S-shape. In addition this zone is also characterized by the presence of drag folds, plunging folds, vertical folds, closed and tight folds.

Keywords: *Shear zone, Ductile stress, Schistosity, Shear zone indicators.*



National Workshop on Mineral-based Geological Advancements in Jharkhand with emphasis on Mineral Investigation Programmes and NGDR Stakeholder Utility Interface: 7-9 July 2024, Ranchi, Jharkhand		
10	Geology and Geochemistry of medium to coarse grained sandstone of the Facies B of Pathera Formation belonging to the Narmada Group, Eastern India: Implications on provenance, source area weathering, depositional environment, and geodynamic set-up	Priyanshu Kumar Yadav, Dhruvanjay Kumar Patel
11	Section-wise classification of Chhotanagpur Granite Gneiss Complex in parts of Jharkhand state: An addition to the existing view	Pragalla Debnath, Hariprade, Shrutu Shukla, Lata Kola, Rana Prashant Arjun
12	Ekta-Pahari Shear Zone in Chhotanagpur Granite Gneiss Complex, Jharkhand: Insights into Brittle-Ductile Deformation	Rama Shil, Jagadish Dutta, Biswajit Bhowmik, Subal Chandra Mitra
13	Stratigraphic reappraisal of Dhanjori Basin and its tectonic relation with Singhbhum Shear Zone	Saptarshi Mallick, Arup Ratan Manna, Arun Kumar Kujur, J P Mohanta
14	Heterogeneity in Intertraps of The Rajmahal Volcanic Province	Sunabhi Pal, Jagadish Dutta, Anjali Pal, R. S. K. Ravi
15	Geological Insights: Rock Types and Structures in the Uberiya Shear Zone	Sreyasi Ray, Somesh Sengupta, Melvin A. Ekka
16	Geology and Structure of eastern part of Gangpur Mobile Belt with Tectonic relevance in parts of Odisha and Jharkhand.	Swarajit Mondal, Kallola Kumar Behera, Mayu Tripathi, Tanveer Fatima Khan

Name of Faculty: Dr. Raman Kumar Das

Department of Mathematics

Email: ramandas749@gmail.com

ORCID ID – 0009-0003-5032-7802



Research Papers – 01

Shekhar Suman · Raman Kumar Das; A NOTE ON AN EQUIVALENT OF THE RIEMANN HYPOTHESIS, J. of Ramanujan Society of Mathematics and Mathematical Sciences Vol. 10 No. 1 pp. 97–102, 2022, ISSN(Online) 2582 – 5461, ISSN(Print) 2319 – 1023

Abstract

In this manuscript we denote by \sum_{ρ} a sum over the non trivial zeros of Riemann zeta function (or over the zeros of Riemann's xi function), where the zeros of multiplicity k are counted k times. We prove a result that the Riemann Hypothesis is true if and only if

$$\sum_{\rho} \frac{1}{\left|\frac{1}{2} - \rho\right|^2} = \frac{1}{2} \left(\frac{\xi''(\frac{1}{2})}{\xi(\frac{1}{2})} \right)^2 - \frac{1}{6} \left(\frac{\xi^4(\frac{1}{2})}{\xi(\frac{1}{2})} \right)$$

Keywords: Riemann zeta function · Riemann xi function · Riemann Hypothesis · Hadamard product

Name of Faculty: Vijay Kumar Mehta

Department of Mathematics

Email Id: vijay.mehta182@gmail.com

ORCID ID – 0009-0007-4262-825X

- **Total Number of Research papers published-3**
- **Total Number of Research Papers Presented in Seminar/Conference-4**



Research Papers – 01

Vijay kumar mehta, sahdeo mahto; duality for interval-valued multiobjective optimization problem involving generalized convexity assumptions, International Journal of Engineering, Science and Mathematics, Vol. 13 Issue 6, June 2024, Pages 29–35 ISSN: 2320-0294

Abstract

This paper explores the domain of multiobjective optimization problems, with a particular focus on interval-valued optimization problems that involve vanishing constraints. Our research is structured around the formulation of the Mond-Weir type dual model, from which we derive multiple duality results. These results include weak, strong, and strict converse duality theorems to the multiobjective interval-valued mathematical problem and its associated dual model. Further our work is presented in the form of detailed conclusions.

Research Papers - 02

vijay kumar mehta, sahdeo mahto; duality theory for multiobjective optimization problem with invexity assumptions, International Journal of Mathematical Archive, pp. 01–06, 2024, ISSN 2229 – 5046.

Abstract

The study of multiobjective optimization problems often involves dealing with interval-valued objective functions, which represent uncertainty in real-world applications. This abstract presents an examination of multiobjective interval-valued optimization problems where the objective functions are invex, a generalization of convexity. The paper investigates the duality theory related with these types of problems, exploring how dual formulations can provide bounds and approximate solutions also insights into the feasibility and optimality of the original problem. By using invexity, we extend traditional convex optimization technique to handle interval-valued objectives, thus expanding the applicability of duality results. This study aims to develop theoretical foundations for solving these difficult problems, with a focus on characterizing optimal solutions and exploring their dual relationships.

Research Papers - 03

Vijay kumar mehta, sahdeo mahto; Fractional interval-valued vector optimization problem, International Research Journal of Mathematics, Engineering and IT

Volume 11, Issue 12, Dec 2024, pp.01–10, ISSN: (2349-0322).

Abstract

In this article, we have focus on \in –constraint approach to a class of fractional interval-valued vector optimization problem. First of all, we have established the relation between LU-optimal solution and weak LU-efficient solution to the problem (FIVP) . Then, we have shown that LU-efficient solution to the problem (FIVP) is equal to LU optimal solution to the problem(FIVP) . Finally, we have shown the uniqueness of the solution.

Seminar/Conference attended/Paper Presented (National/International):

- 1) Paper titled “An Elementary Treatise on Convex Optimization” presented in International Conference organized by Department of physics, St. Xavier’s College, Ranchi, Jharkhand (Jan. 2024)
- 2) Paper titled “A study on convex programming problems” presented in international conference organized by Department of Mathematics, Aiman College of Arts and Science for Women, Tiruchirappalli- 620021 (Feb. 2024)
- 3) Paper titled “Analysis of Weak Duality in Nonlinear Programming” presented in national conference organized by Department of Statistics, Central University of Orissa, March 2024.
- 4) Paper titled “Analysis of Strong Duality in Nonlinear Programming” presented in the International Conference organized by Department of Mathematics, Ayya Nadar Janaki Ammal College, Sivakasi, March 2024.

Name of Faculty: Dr. Pappu Mahto

Department of Mathematics

Email: pappumahto89@gmail.com

ORCID ID – 0000-0003-4702-9882

- **Total Number of Research papers published-1**
- **Total Number of Research Papers Presented in Seminar/Conference-9**



Research Papers – 01

pappu mahto and smita dey; mathematical model of disease transmission in presence of vaccination with a non-constant population size, journal of the calcutta mathematical society, Volume 21, Number 1, Pages 72–80(2025) 2231-5314

Abstract

We describe and analyze a compartmental model for disease transmission. The epidemiological model includes birth, natural death, and death due to disease. In the model with vaccination, the differential equations indicate that the behavior is asymptotically and globally stable. For a certain case the model is stable and for some other specific case it is unstable. The stability of the disease – free equilibrium (DFE) and the endemic equilibrium

(EE) is discussed here and we found the result that the equilibrium points are asymptotically stable under certain condition. Basic reproduction number (R_0) plays very important role for any disease and about its future effect. If the basic reproduction number (R_0) is less than or equal to unity and greater than unity, the DFE and EE are stable and unstable respectively.

Book Chapter –

Title - Proceedings of the Fifth International Conference on Emerging Trends in Mathematical Sciences & Computing (IEMSC-24). Chapter title - Analysis of SEIR Type Epidemic Model, Publisher name - Springer, Cham, Page number - 385-393, ISBN - 978-3-031-66741-1, OCTOBER 2024.

Part of the book series:

Information Systems Engineering and management ((ISEM, volume 10))

Abstract

The first epidemic model is the classical SIR model, where the population is divided into three subclasses, S, I and R. Here we discuss an epidemic model of type SEIR, where the model is divided into four compartments S, E, I and R and having non – linear incidence and discuss the stability analysis. For the stability analysis of the equilibrium point of the given model, we use Lyapunov – Lasalle invariance principle. We also discuss the asymptotic behavior of this. Here R_0 is very important for any diseases to be epidemic, endemic or pandemic. If $R_0 < 1$ Then DFE is globally asymptotically stable. If $R_0 > 1$, then EE appears which is globally asymptotically stable. If $R_0 = 1$, then disease will be there in the system which may increase in future if the favourable condition occurs.

Paper Presented in Seminar/Conference (National/International):

- 1) Presented a paper titled **“SEIR Mathematical model with treatment at the latent class”** in the International Conference on Theme Developed India @ 2047: Charting Multidisciplinary and Multi-Institutional Pathways for Inclusive Growth and Global Leadership, organized by Gossner College, Ranchi held during 4th – 5th April 2025.
- 2) Presented a paper titled **“Analysis of Mathematical Model with Variable Population Size”** in the National Conference on Recent Trends in Computation and Mathematical Analysis in Engineering & Science (CMAES-2024), organized by Silli Polytechnic, Ramdera, Silli, Ranchi held during 11th -12th May 2024.
- 3) **“Equilibrium Analysis of Mathematical Model”**, in the National Conference on Recent Trends in Mathematics, organized by PG Department of Mathematics, Guru Nanak College, Sri Muktsar Saheb, Amritsar, Punjab on 27th March 2024.
- 4) **“Stability Analysis of SIR Model”** in the International Conference on Mathematical Challenges and Novel Applications – 2024, jointly organized by Department of Mathematics, Ayya Nadar Janaki Ammal College, Sivakasi, Ramco Institute of Technology, Rajapalayam and The Standard Framework Rajaratnam College ofWomes, Sivakasi on 21st-22nd March 2024.
- 5) **“Mathematical Model with the no - constant population size”** in International Seminar on Physical and Mathematical Science (ISPMS-2024) Organized by The Culcutta Mathematical Society on March 02 – 03, 2024.
- 6) **“Study of a Simple Mathematical Model”** in the International conference in “Recent Trends in Mathematics and its Applications (ICRTMA’24)” Organized by the Department of Mathematics on 23rd February 2024 in AIMA College at Trichi – 620021.
- 7) **“Analysis of SEIR type epidemic model”** in Contributory session – I C Applied Mathematics at the International Conference on Emerging trends in Mathematical Sciences & Management (IEMSC - 24), held in Institute of Engineering & Management, Kolkata During 2nd to 4th February, 2024.
- 8) **“Analysis of the SIR type Epidemic Model”** in the 1st International conference on Advances in Novel Materials: Towards Sustainable Future (ICAN - 2024) from 20th – 22nd January 2024 at St. Xavier’s College, Ranchi Jharkhand, India.
- 9) **“Stability analysis of the SIRS Model in the presence of vaccination at the susceptible class”** in the 2 – Day National conference on Mathematical and Statistical modeling in innovative Areas (MASTMIN - 2023) held at RTCIT, Ranchi during February 03 – 04, 2023.

Name of the Faculty/Researcher- Dr. Swarat Chaudhuri

Department of Physics

Email- swarat@sxcraan.org

Web of Science ID-JBF-8296-2023



- **Total Number of Research papers published-02**
- **Total Number of Research Papers Presented in Seminar/Conference-01**
- **Total of Ph.D Students-02**

Research article-01-

Rakesh Prasad; Manisha Prasad; Joydip Dutta; Swarat Chaudhuri⁴ Mitesh Chakraborty; Upconversion emission studies in Er³⁺-Tm³⁺-Yb³⁺-Gd³⁺: ZnTiO₃ phosphor for light emitting display devices, AIP Conf. Proc. 3196, 050006 (2024), Publisher: AIP.

Upconversion emission studies in Er³⁺-Tm³⁺-Yb³⁺-Gd³⁺: ZnTiO₃ phosphor for light emitting display devices

Rakesh Prasad¹; Manisha Prasad²; Joydip Dutta³; Swarat Chaudhuri⁴; Mitesh Chakraborty⁴

1. Research Fellow, University Department of Physics, Ranchi University, Ranchi. Ranchi -834001, Jharkhand, India
2. Laser and Spectroscopy Lab, Department of Physics, Indian Institute of Technology (Indian School of Mines) Dhanbad-826004, Jharkhand, India
3. Institute Post-Doctoral Fellow, Central Research Facility, Indian Institute of Technology (Indian School of Mines) Dhanbad-826004, Jharkhand, India
4. Department of Physics, St. Xavier's College, Ranchi-834001, Jharkhand, India

Abstract

The Zn_{0.98425}Er_{0.0025}Tm_{0.0005}Gd_{0.0025}Yb_{0.005}TiO₃ phosphor characterized by X-ray diffraction (XRD) is successfully synthesized by high energy ball milling (HEBM) and solid state reaction method. The frequency upconversion (UC) emission spectra was recorded using 980 nm continuous wave (CW) laser source in the interval 450-850 nm. The emission spectra exhibits five bands peaking near ~ 482 nm, ~ 523 nm, ~ 546 nm, ~ 655 nm and ~ 801 nm related to $4F_{7/2} \rightarrow 4I_{15/2}$, $2H_{11/2} \rightarrow 4I_{15/2}$, $4S_{3/2} \rightarrow 4I_{15/2}$, $4F_{9/2} \rightarrow 4I_{15/2}$ and $4I_{9/2} \rightarrow 4I_{15/2}$ transitions of Er³⁺ ion respectively. Due to triple doped Tm³⁺ ions in the host matrix, the emission spectra also escalates near ~ 671 nm and ~ 808 nm corresponding to $^1G_4 \rightarrow ^3F_4$ and $^3H_4 \rightarrow ^3H_6$ transitions separately. The pump power dependence, colour coordinates and energy transitions are analysed in the present investigation. The prepared sample can be explored to design light emitting display devices.

Keywords- Emission spectroscopy, Materials synthesis and processing, Optical materials, X-ray diffraction, Display devices

Research article-02-

Evaluation of crystal size present in graphene oxide quantum dots using optical and Raman spectroscopy

Prabin Kumar Mahato a, Swarat Choudhuri b, Chandra Kumar c, Sumit Roy b, Prashanta Patra d

Materials Today: Proceedings, Volume 80, Part 2, 2023, Pages 668-673, <https://doi.org/10.1016/j.matpr.2022.11.066>

Abstract

Graphene has received enormous research interest in recent years. Here we report, the evaluation of the crystal size of graphene oxide(GO) quantum dots(QD) using optical and Raman spectroscopy. Raman studies indicate the D, G, and D" band, indicating the formation of GO-QD. Crystal size was estimated using the Raman spectra, which is 4.2 nm, comparable to Bohr size, indicating the synthesis GO is a QD. XRD, FTIR, FESEM, and EDAX were used to explore GO-QD and structural and physicochemical features. The XRD pattern revealed reflection planes (0 0 1) at $2\theta = 9.50^\circ$. Crystal size was estimated using the Scherer equation, which is 2.2 nm. Moreover, the Optical spectra-based Brus model and Hyperbolic Band (HB) models have been used for the estimation of size. An FTIR was used to confirm the existence of oxygen-containing functional groups in GO. FESEM revealed that GO quantum dots have a sheet-like morphology. The zeta potential is used to determine the surface charge of dispersed components in the solution and the stability of the produced Nanofluid. The results indicate that small suspended particles resist aggregation and are distributed uniformly in solution. Thus, the synthesized GO-QD exhibit several exciting and unique qualities that make them suitable for numerous energy storage and conversion applications.

Ph.D. Supervision

Sl No	Name of Research Scholar	Date of Registration	Topic of Ph.D.	Status
1	Shyamanand Pandey	08.10.21	Effect of milling on structural and electrical properties of PZT ceramics	Ongoing
2	Prabin Kumar Mahato	08.10.21	Study of Graphene Nanocomposites: Synthesis Properties and Applications	Ongoing

Conference/Seminar-1

- Participated and presented a paper entitled “**Upconversion emission studies in Er^{3+} - Tm^{3+} - Yb^{3+} - Gd^{3+} : ZnTiO_3 phosphor for light emitting display devices**” in the Two-day international conference named “**1ST INTERNATIONAL CONFERENCE ON ADVANCES IN NOVEL MATERIALS: Towards Sustainable Future (ICAN-24)**”, from 20th Jan to 23th Jan 2024, organized by Department of Physics, St. Xavier's College, Ranchi.

Name of the Faculty/Researcher- Dr. Sumit Kumar Roy

Department of Physics

Email: sumit.sxc13@gmail.com

Web of Science ID- ABB-8768-2021

ORCID ID- 0000-0002-7508-8858

Scopus ID- 57213545866



- **Total Number of Research Papers Published – 04**
- **Total Number of Research Papers Presented in Seminar/Conference-01**

Research article-01

Santosh Rajwar, Rahul K. Singh, Santosh K. Singh, Sumit K. Roy & Kamal Prasad; Tuning the β -phase in BNBT/PVDF composite films: structural and impedance study, Journal of Polymer Research (2025) Volume 32, article number 261, (2025), Publisher: Springer.

Tuning the β -phase in BNBT/PVDF composite films: structural and impedance study

Santosh Rajwar¹, Rahul K. Singh², Santosh K. Singh³, Sumit K. Roy⁴ & Kamal Prasad⁵

1. Department of Physics, Marwari College, Ranchi University, Ranchi 834001, Jharkhand, India
2. University Department of Physics, Ranchi University, Ranchi 834009, Jharkhand, India
3. Department of Physics, Yogoda Satsanga Mahavidyalaya, Ranchi University, Ranchi 834004, Jharkhand, India
4. Department of Physics, St. Xavier's College Ranchi, Ranchi University, Ranchi 834001, Jharkhand, India
5. University Department of Physics, T.M. Bhagalpur University, Bhagalpur 812 007, India

Abstract

The development of lead-free piezoelectric materials is essential for advancing flexible electronics and sustainable energy harvesting applications. In this study, $\text{Ba}_{0.06}\text{Na}_{0.47}\text{Bi}_{0.47}\text{TiO}_3$ (BNBT) doped polyvinylidene fluoride (PVDF) composite films were synthesized using a solution-casting technique to enhance the electroactive β -phase content. Structural characterization through X-ray Diffraction, Fourier Transform Infrared Spectroscopy, and Scanning Electron Microscopy confirmed the α -to- β phase transformation, with BNBT particles acting as nucleation sites. Differential Scanning Calorimetry demonstrated decreased crystallinity and phase stability, while dielectric studies revealed a significant enhancement in the dielectric constant due to optimized β -phase formation. The dielectric data show a peak both in dielectric constant and dielectric loss at $x = 0$ (RT) and $x = 0.025$, followed by a decline, then a rise from $x = 0.1$ onward due to increased ceramic content. Impedance and modulus spectroscopy confirmed improved charge transport, reduced resistive losses, and thermally activated relaxation dynamics. The Nyquist plot analysis further validated decreased bulk resistance and increased conductivity with rising temperature, indicating improved electrical performance. The results establish that the β -phase of PVDF stabilizes at a lower doping concentration than reported by other studies

Keywords - Polyvinylidene fluoride · Composites · Perovskite · Dielectric constant · Impedance analysis · Thermal property

Research article-02

Mrityunjay Kumar, Sumit K. Roy, Rahul K. Singh, Kamal Prasad; Double perovskite $\text{Nd}_2\text{FeTiO}_6$ ceramics: Structural and electrical properties, Processing and Application of Ceramics 17 [4] (2023) 428–435, Publisher: Faculty of Technology, University of Novi Sad.

Double perovskite $\text{Nd}_2\text{FeTiO}_6$ ceramics: Structural and electrical properties

Mrityunjay Kumar^{1,2}, Sumit K. Roy³, Rahul K. Singh⁴, Kamal Prasad⁵

1. Department of Physics, Govt. Naveen College, Tokapal, Bastar 494442, India
2. University Department of Physics, Ranchi University, Ranchi 834009, India
3. Department of Physics, St. Xavier's College, Ranchi 834001, India
4. Department of Physics, St. Xavier's College Ranchi, Ranchi University, Ranchi 834001, Jharkhand, India
5. University Department of Physics, T.M. Bhagalpur University, Bhagalpur, 812007, India

Abstract

Because of their high stability, innocuous behaviour, outstanding electric properties and multi-functionality, lead-free double perovskites have emerged as a promising alternative to lead-based perovskites. We present here the structural, microstructural, dielectric and electrical properties of a newly synthesized double perovskite $\text{Nd}_2\text{FeTiO}_6$ (NFTO). The Rietveld refinement of its X-ray diffraction pattern revealed a monoclinic structure with space group $\text{P}121/\text{c}1$. The oxide exhibits a temperature-independent dielectric constant and dielectric loss at low temperatures (below 200°C) making the compound a suitable candidate for fabricating thermally stable capacitors. The AC conductivity was investigated using the Jonscher's universal power law, and it was inferred that the conduction process is caused by the Correlated Barrier Hopping (CBH) mechanism. Furthermore, frequency dependent AC conductivity also revealed the NTCR nature of the NFTO compound.

Keywords - perovskites, lead-free ceramic, microstructure, dielectric constant, impedance

Research article-03-

Santosh Rajwar, Sushil Kumar Pandey, Sumit K. Roy; Structure, Microstructure, and Dielectric Properties of $\text{Bi}_{0.5}(\text{Na}_{0.78}\text{K}_{0.22})_{0.5}\text{TiO}_3$ Lead-Free Ceramic, Materials Science Forum, Volume 1097, 77-84, Publisher: Trans Tech Publications Ltd, Switzerland.

Structure, Microstructure, and Dielectric Properties of $\text{Bi}_{0.5}(\text{Na}_{0.78}\text{K}_{0.22})_{0.5}\text{TiO}_3$ Lead-Free Ceramic

Santosh Rajwar¹, Sushil Kumar Pandey², Sumit K. Roy²

1. Department of Physics, Marwari College, Ranchi University, Ranchi 834001, Jharkhand, India
2. Department of Physics, St. Xavier's College, Jharkhand, Ranchi 834001, India

Abstract

In this article, the structural, microstructural, and dielectric properties of Lead-free perovskite ceramic $\text{Bi}_{0.5}(\text{Na}_{0.78}\text{K}_{0.22})_{0.5}\text{TiO}_3$ [BNKT] have been reported. The material was synthesized through the solid-state reaction method. The compound formed is found to have a hexagonal structure, confirmed by XRD analysis of the sample. The microstructural analysis of the compound revealed the polycrystalline nature of the ceramic having quasi-cubic grain morphology with distinct grain boundaries. From the dielectric

study, it was found that the dielectric constant increases with temperature and attained maximum value at temperature $T_c = 335^\circ \text{C}$, after which it decreased. The frequency independence of transition temperature (T_c) suggested the classic ferroelectric behaviour of the compound. The broad dielectric peak around transition temperature confirms the relaxor behaviour of the compound as well as diffused phase transition at T_c . The value of the relative permittivity and loss tangent at ambient temperature for 1kHz frequency is 627 and 0.223 respectively. The synthesized material can be utilized for the fabrication of capacitors and energy storage applications.

Keywords- *perovskites, lead-free ceramic, microstructure, dielectric constant, impedance*

Research article - 04

Santosh Rajwar¹, Sushil Kumar Pandey², Sumit K. Roy²; Structure, Microstructure, and Dielectric Properties of $\text{Bi}_{0.5}(\text{Na}_{0.78}\text{K}_{0.22})_{0.5}\text{TiO}_3$ Lead-Free Ceramic, Materials Science Forum, Volume 1097,77-84, **Publisher:** Trans Tech Publications Ltd, Switzerland.

Electrical properties of $\text{Ba}_{0.06}(\text{Na}_{0.5}\text{Bi}_{0.5})_{0.94}\text{TiO}_3$ - $\text{Ba}(\text{Fe}_{0.5}\text{Ta}_{0.5})\text{O}_3$ ceramics: Impedance spectroscopy analysis

Kumari Sweta¹; Ayushi Singh¹; Shalini Kumari¹; Sumit K. Roy¹, Sushil K. Pandey¹; K. Prasad²

1. Department of Physics, St. Xavier's College, Jharkhand, Ranchi 834001, India
2. University Department of Physics, T.M. Bhagalpur University, Bhagalpur, 812007, India

Abstract

Researchers worldwide have started diving deep into revolutionary sustainable materials called non-toxic lead-free ceramics for a sustainable and safe environment. These days' literature has suggested that Bi-based perovskite compounds are considered to be potential non-lead/lead-free candidates that have attracted much attention because of their giant dielectric response over a wide temperature and frequency interval. Some of the interesting materials among them involve $\text{Ba}(\text{Fe}_{0.5}\text{Ta}_{0.5})\text{O}_3$ (BFT) and $(1-x)(\text{Bi}_{0.5}\text{Na}_{0.5})\text{TiO}_3$ - $x\text{BiTiO}_3$ with their remarkable dielectric, piezoelectric and electromagnetic properties. For the contents of this paper, the lead-free perovskite-type ceramics $(1-x)\text{Ba}_{0.06}(\text{Na}_{0.5}\text{Bi}_{0.5})_{0.94}\text{TiO}_3$ - $x\text{Ba}(\text{Fe}_{0.5}\text{Ta}_{0.5})\text{O}_3$ ($0 \leq x \leq 1.0$) is prepared by the conventional solid-state reaction technique using high purity (>99.9%) carbonates/oxides of BaCO_3 , Na_2CO_3 , Bi_2CO_3 , TiO_2 and Ta_2O_5 . Successful formation of the desired compound is confirmed by XRD and FTIR. The electrical impedance, dielectric constant, and conductivity of the ceramics were studied using a computer-interfaced Impedance analyzer where the temperature was varied at a rate of $5^\circ\text{C}/\text{min}$. In the ceramics, a high degree of polarization was indicated at low applied frequencies, which is directly correlated to high temperature. Short-range translation barrier hopping initiated by thermal activation was also noticed. The ac conductivity, impedance, and other factors with their dependence on applied frequency have been studied to understand its conduction mechanism better.

Ph.D. Supervision

Sl No	Name of Research Scholar	Date of Registration	Topic of Ph.D.	Status
1	Rahul Singh (SRF)	2020	Fabrication and Characterization of Silver decorated flexible BNKT {Bi _{0.5} (Na _{1-x} K _x) _{0.5} TiO ₃ } composites	Ongoing
2	Mrityunjay Kumar	2020	Study of Dielectric, Electromechanical and Optical Properties of Some Lead Free Double Perovskite Materials For Solar Cell Application	Ongoing

Conference/Seminar-1

- Participated and presented a paper entitled “**Electrical Properties of Ba_{0.06}(Na_{0.5}Bi_{0.5})_{0.94}TiO₃-Ba(Fe_{0.5}Ta_{0.5})O₃ Ceramics: Impedance Spectroscopy Analysis**” in the Two-day international conference named “**1ST INTERNATIONAL CONFERENCE ON ADVANCES IN NOVEL MATERIALS: Towards Sustainable Future (ICAN-24)**”, 20th Jan to 23th Jan 2024, organized by Department of Physics, St. Xavier’s College, Ranchi.

Name of the Faculty/Researcher- Mrs. Swagata Chakraborty

Department of Physics

Email- babi2911@rediffmail.com

Web of Science ID- MVC-6326-2025

ORCID ID- 0009-0008-6279-5108



- **Total Number of Research Papers Published – 01**

Research article-01

Swagata Chakraborty, Joydip Dutta, Mitesh Chakraborty; Enriched upconversion emission and electrical properties of $\text{Er}^{3+}/\text{Yb}^{3+}/\text{Mn}$: ZnWO_4 phosphors for display and anti-counterfeit applications, Published in Materials Science in Semiconductor Processing; Print ISSN No-1369-8001; Online ISSN No-1873-4081; Impact factor 4.6; Published by -Elsevier; (Via-Science Direct.com)

Enriched upconversion emission and electrical properties of $\text{Er}^{3+}/\text{Yb}^{3+}/\text{Mn}$: ZnWO_4 phosphors for display and anti-counterfeit applications

Swagata Chakraborty^{1,2}, Joydip Dutta³, Mitesh Chakraborty¹

1. Department of Physics, St. Xavier's College Ranchi, Ranchi University, Ranchi 834001, Jharkhand, India
2. University Department of Physics, Ranchi University, Ranchi-834008, Jharkhand, India
3. Central Research Facility, Indian Institute of Technology (Indian School of Mines), Dhanbad- 826004, Jharkhand, India

Abstract

The upconverting codoped/tridoped $\text{ZnWO}_4:\text{Er}^{3+}/\text{Yb}^{3+}/\text{Mn}$ materials have been synthesized for structural, electrical and optical studies. The X-ray diffraction (XRD) investigation confirms the highly crystalline monoclinic phase of the prepared material. The elemental mapping indicates complete incorporation of the raw ingredients in the host. Charge transfer band (CTB) is observed between the Mn^{4+} and O^{2-} ions in the interval 239–282 nm of the Diffuse Reflectance Spectra (DRS). Some characteristic absorption bands of Mn^{3+} ion due to $5E \rightarrow 5E'$ transition is also observed in the region 806–908 nm of the DRS spectra. We have also reported the Raman and Fourier transform of Infra-red (FTIR) vibrations of the optimized sample in the present investigation. The temperature dependant EPR spectra infers cation vacancies in the host matrix. The XPS study confirms the mixed state of Mn^{4+} and Mn^{3+} ion in the host material. The CIE spectra and photometric calculations shows that these high colour purity phosphors may be explored to design cool LEDs. The investigation of electrical parameters advocates display applications in the temperature region 30°C to 100°C of the prepared material. The anti-counterfeit application is also demonstrated in the present study.

Keywords- Phosphor, Vacancies, Upconversion, Downconversion, Dielectrics

Name of the Faculty/Researcher Dr. Mitesh Chakraborty

Assistant Professor

Department of Physics

Email: miteshsxc@gmail.com

ORCID ID: 0000-0002-7091-468X

Google Scholar ID: pFA79GcAAAA

Web of Science Researcher ID: IWM-3945-2023



Doctoral thesis of two candidates in progress, registered on 7th January, 2023 at University Department of Physics, Ranchi University, Ranchi.

- (i) Rakesh Prasad, Guest lecturer, B.S. College, Lohardaga, Ranchi University, Ranchi.

Topic of research: Study of the structural and optical properties of some ceramics for temperature sensing applications

- (ii) Swagata Chakraborty, Lecturer, Department of Physics, St. Xavier's College, Ranchi.

Topic of research: Study of the electrical and optical properties of phosphors for electronic and lighting applications

Book Chapter

1. **Title:** Soft Materials for Biomedical Engineering

Citation: **Mitesh Chakraborty**, Joydip Dutta, Soft Materials for Biomedical Engineering; Soft Materials for Functional Applications, Eds: V. Kumar, Y. K. Mishra, Springer Nature, Singapore, 225 (2024) 97-128. https://doi.org/10.1007/978-981-97-9468-3_4

Publisher: Springer, Singapore

Print ISBN: 978-981-97-9467-6

Online ISBN: 978-981-97-9468-3

Mitesh Chakraborty: Department of Physics, St. Xavier's College, Ranchi-834001, Ranchi University, Ranchi, Jharkhand, India

Joydip Dutta: Central Research Facility, Indian Institute of Technology (Indian School of Mines), Dhanbad-826004, Jharkhand, India

Abstract

This chapter discusses the different types and synthesis methods of soft materials. We have also reported biomaterials synthesized from natural proteins. In this context, we have discussed hydrogels, their structural formation, and their application in soft robotics for biomedical purposes. Biomedical applications of advanced biomaterials, shape memory alloys, soft robotics, the design of soft materials for drug delivery, biomimetics, and hydrogel-based biomedical sensors are explored in the present discussion. We have also analyzed hydrogels' applicability and performance parameters based on volumetric changes and elasticity factors. Though we have discussed the applicability of hydrogels in sensing, actuation devices, robotics, and advanced surgical procedures, there is still scope of new paradigms for uses of hydrogels in multidisciplinary fields of material and medical sciences.

2. *Theranostic applications of persistent luminescence nanoparticles*

Publisher Name : Springer, Singapore

Print ISBN: 978-981-97-4942-3

Online ISBN: 978-981-97-4943-0

Citation: Joydip Dutta, **Mitesh Chakraborty**, *Theranostic applications of persistent luminescence nanoparticles*; Persistent Luminescence, Eds: V. Kumar, I. Ayoub, Y. K. Mishra, H. C. Swart, Springer Nature, Singapore, 30 (2024) 223-250. https://doi.org/10.1007/978-981-97-4943-0_8

Authors and Affiliations:-

Joydip Dutta: Central Research Facility, Indian Institute of Technology (Indian School of Mines), Dhanbad-826004, Jharkhand, India

Mitesh Chakraborty: Department of Physics, St. Xavier's College, Ranchi-834001, Ranchi University, Ranchi, Jharkhand, India

Abstract

In the present book chapter, we have discussed all fundamental aspects related to synthesis techniques, different types of characterizations, mechanisms of afterglow and applications in the medical fields of persistent luminescence nanoparticles (PLNPs). Different types of applications in the context of luminescence imaging, photodynamic therapy, different forms of tumor diagnosis, and means of treatments are reported. Recent studies reported by researchers based on modification and design transfer of biological surfaces of PLNPs are specified in our content. Exploration of the afterglow property to upgrade the sensitivity of nanoprobes in viz. biosensing, bioimaging, theranostics, etc. are reviewed in the present study. We have also debated about various techniques for tumor-targeted imaging, methods to improve the accuracy of stem cell tracking, different therapies based on stem cells, highly efficient multimodal nanoprobes for imaging, and nano-agents for theranostic applications. Limitations and scope for improvement of PLNPs for applications in biomedical systems are also debated in the current study.

List of some International publications in peer-reviewed journals:

1. R. Prasad, M. Prasad, J. Dutta, M. Chakraborty, Tailoring Er³⁺ doped ZnTiO₃ ceramic surfaces for high colour purity display device applications, *Surface Engineering*, 41(3) (2025) 438-442. <https://doi.org/10.1177/02670844251323058>

Authors and Affiliations:-

Rakesh Prasad : Research Fellow, University Department of Physics, Ranchi University, Ranchi, Jharkhand, India

Manisha Prasad: Laser and Spectroscopy Laboratory, Department of Physics, Indian Institute of Technology (Indian School of Mines) Dhanbad-826004, Jharkhand, India

Joydip Dutta: Central Research Facility, Indian Institute of Technology (Indian School of Mines), Dhanbad, Jharkhand, India

Mitesh Chakraborty: Department of Physics, St. Xavier's College, Ranchi, Ranchi University, Ranchi, Jharkhand, India

Journal details: Surface Engineering, Publisher: Sage Publishers, ISSN: 0267-0844, eISSN: 1743-2944

Abstract

In the present study, we have reported the photoluminescence investigation of Er^{3+} doped ZnTiO_3 ceramics prepared using a planetary ball mill and solid state reaction method. The prepared phosphors have been optically investigated using a 980 nm continuous laser wave diode excitation source. The recorded spectra of upconversion (UC) emission and optical pump power dependence are in the range of 300 nm to 900 nm wavelength region. We have observed four UC peaks ~ 524 nm, ~ 549 nm, ~ 655 nm and ~ 798 nm corresponding to the $^2\text{H}_{11/2} \rightarrow ^4\text{I}_{15/2}$, $^4\text{S}_{3/2} \rightarrow ^4\text{I}_{15/2}$, $^4\text{F}_{9/2} \rightarrow ^4\text{I}_{15/2}$ and $^4\text{I}_{9/2} \rightarrow ^4\text{I}_{15/2}$ transitions of Er^{3+} ion respectively. An energy level diagram for the emission spectra of the Er^{3+} ions has been shown. Using the Commission Internationale de l'Éclairage (CIE) chromaticity diagram color coordinates of the prepared phosphors are estimated and the coordinates are observed in the green region with high color purity. Based on this investigation, the prepared ceramics can be utilized as green emitting display device applications.

2. J. Dutta, **M. Chakraborty**, V. K. Rai, Tm^{3+} ; Yb^{3+} : Zn_2TiO_4 near infrared to blue upconversion phosphors for anti-counterfeit applications, RSC Adv., 13 (34) (2023) 23386. 2046-2069, <https://doi.org/10.1039/D3RA03238H>

Authors and Affiliations:-

Joydip Dutta: Central Research Facility, Indian Institute of Technology (Indian School of Mines), Dhanbad-826004, Jharkhand, India

Mitesh Chakraborty: Department of Physics, St. Xavier's College, Ranchi-834001, Ranchi University, Ranchi, Jharkhand, India

V. K. Rai : Professor of Physics, Laser and Spectroscopy Laboratory, Department of Applied Physics Indian Institute of Technology (Indian School of Mines). Dhanbad, Jharkhand, India

Journal details: RSC Advances, Publisher: The Royal Society of Chemistry, eISSN: 2046-2069

Abstract

Tm^{3+} ; Yb^{3+} : Zn_2TiO_4 samples have been synthesized using solid state reaction route. The phase, lattice parameters, crystallite size has been examined using X-ray Diffraction (XRD) and high resolution transmission electron microscopy (HRTEM). An intense peak of Yb^{3+} codoped samples is observed near ~ 957 nm due to the $^2\text{F}_{7/2} \rightarrow ^2\text{F}_{5/2}$ transition in diffuse reflectance spectra (DRS), which confirms the presence of Yb^{3+} ion in the prepared compound. The optical band gap of Yb^{3+} codoped samples has been calculated using Kubelka-Munk function. The Raman spectra corresponds to incorporation of Tm^{3+} / Yb^{3+} at the octahedral and tetrahedral site of the spinel host. The emission spectra recorded by using 370 nm excitation wavelength shows intense blue colour band corresponding to the $^1\text{G}_4 \rightarrow ^3\text{H}_6$ transition of Tm^{3+} ion. The upconversion (UC) emission spectra recorded by using 980 nm laser excitation source shows emission bands due to the $^1\text{G}_4 \rightarrow ^3\text{H}_6$, $^1\text{G}_4 \rightarrow ^3\text{F}_4$ and $^3\text{H}_4 \rightarrow ^3\text{H}_6$ transitions of Tm^{3+} ion in the host matrix lying in the blue, red and NIR regions respectively. There is effective enhancement of about ~ 35 times in the blue UC emission intensity with incorporation of Yb^{3+} at 3% doping concentration in the prepared sample. The anti-counterfeit application of the optimized upconverting phosphor has been successfully demonstrated.

Faculty Development Programmes (FDP) attended:

1. Participated in the Refresher Course on Advanced concepts in biophysics and soft matter: *Foundations and Frontiers* organized by Indian Institute of Technology (ISM) Dhanbad from (18th – 29th), October, 2024.
2. Participated in Inter-Disciplinary online Two-Week Refresher Course/ Faculty Development Programme on “Environmental Science” from (4th-18th) September, 2022 at Teaching Learning Centre, Ramanujan College, University of Delhi under the aegis of Pandit Madan Mohan Malviya National Mission on Teachers and Teaching, Ministry of Education, Government of India.
3. Participated in two-week Online Faculty Development Programme on “*Numerical & Engineering Computation, Optimization for Physicists, Scientists & Engineers using open-source SCILAB*” from (21st February-5th March), 2022 at Electronics and ICT Academies of Ministry of Electronics and Information Technology, Government of India.



Name of the Faculty/Researcher- Dr. Rajesh Kumar

Department of Physics

Web of Science ID- ODK-5889-2025

ORCID ID- 0000-0002-1369-2160

- Total Number of Research papers published-2
- Total Number of Research Papers Presented in Seminar/Conference-1
- Total of Ph.D Students-02

Research article-01

R. K. Bommali; Rajesh Kumar; H. Gupta; D. Topwal; S. Ghosh; P. Srivastava; N Sub-surface incorporation of Ag ions in a-SiNx:H for tunable plasmonic response, AIP Conf. Proc. 3196, 050001 (2024), **Publisher:** AIP.

Sub-surface incorporation of Ag ions in a-SiNx:H for tunable plasmonic response

R. K. Bommali¹; Rajesh Kumar¹; H. Gupta²; D. Topwal³; S. Ghosh⁴; P. Srivastava⁴

1. Department of Physics, St. Xavier's College Ranchi, Ranchi University, Ranchi 834001, Jharkhand, India
2. TUM School of Computation, Information and Technology, Department of Electrical Engineering, Technical University of Munich-Garching, Garching, Germany
3. Institute of Physics Bhubaneswar, Bhubaneswar, India
4. Department of Physics, Indian Institute of Technology Delhi, Hauz Khas, New Delhi, India

Abstract

Ion implantation was employed for the growth of embedded silver nanoparticles (NPs) in amorphous hydrogenated silicon nitride (a-SiNx:H) thin films. Crystalline nanoparticles are found to grow in the as-implanted samples without the requirement of an annealing step. The NPs exhibit absorption due to Localized Surface Plasmon Resonance (LSPR). The LSPR peak position, width and intensity, are found depend on the stoichiometry of a-SiNx:H and the implantation energy. A maximum LSPR red shift from 390 nm to 470 nm was obtained with changes in the composition of the host medium..

Keywords- *Plasmonics, Ion implantation, Thin films, Nanoparticle, Stoichiometry*

Research article-02

Rajesh Kumar; Aditya Jaiswal; B. Ravi Kumar; Measurement of height profile of discontinuous surfaces using phase shift white light interferometry, AIP Conf. Proc. 3196, 060001 (2024), Publisher: AIP.

Measurement of height profile of discontinuous surfaces using phase shift white light interferometry

Rajesh Kumar¹; Aditya Jaiswal¹; B. Ravi Kumar¹

Department of Physics, St. Xavier's College Ranchi, Ranchi University, Ranchi 834001, Jharkhand, India

Abstract

We have applied Spectrally Resolved White Light Interferometry (SRWLI) to study height profile of a reflective sample having stepped structure. The Michelson Interferometer has been experimentally set up to obtain interference pattern. The interference pattern of the stepped structured part of the object is focused using a convex lens to entrance slit of a reflection grating spectroscopy. The output of spectroscopy is recorded using the CCD camera. A series of interferograms have been recorded by introducing a phase difference of between the superposing waves. We have analysed the interferograms using the Eight-step Phase Shift Algorithm. Further, the line scan of height profile of a stepped surface has been obtained using a wide band spectrum of white light.

Keywords- *Interferometry, Lenses, Optical spectroscopy, Charge coupled devices*

Ph.D. Supervision

Sl No	Name of Research Scholar	Date of Registration	Topic of Ph.D.	Status
1	Sanjay Kumar	21-02-2025	Study of Surface Topography of 2D and 3D surfaces using Optical methods	Ongoing
2	Ashutosh Roy	27-05-2025	Dynamics of Soliton Waves in Nonlinear Optical Waveguide	Ongoing

Conference/Seminar-1

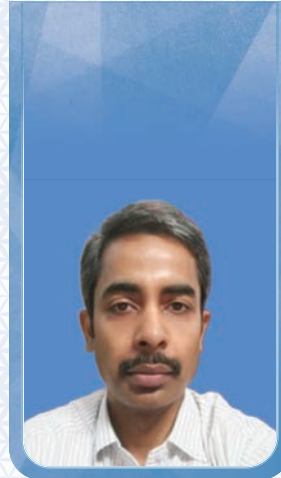
- Participated and presented a paper entitled “**Measurement of height profile of discontinuous surfaces using phase shift white light interferometry**” in the Two-day international conference named “**1ST INTERNATIONAL CONFERENCE ON ADVANCES IN NOVEL MATERIALS: Towards Sustainable Future (ICAN-24)**”, from 20th Jan to 23th Jan 2024, organized by Department of Physics, St. Xavier’s College, Ranchi.

Name of the Faculty/Researcher- Dr. Ravi Kumar B

Department of Physics

Web of Science ID- AFU-9056-2022

ORCID ID- 0000-0002-5685-0827



- Total Number of Research papers published-03
- Total Number of Research Papers Presented in Seminar/Conference-1

Research article - 01

Harsh Gupta; Mohammed H. Modi ; Pariksha Malik ; R. K. Bommali ; Pankaj Srivastava ; Santanu Ghosh; N rich a-SiNx: H as a prospective material for EUV/soft x-ray mirror: A soft x-ray reflectivity analysis near Si L2,3 absorption edge, JOURNAL OF APPLIED PHYSICS, (2025) Volume138, Issue3, **Publisher: AIP.**

N rich a-SiNx:H as a prospective material for EUV/soft x-ray mirror: A soft x-ray reflectivity analysis near Si L2,3 absorption edge

Harsh Gupta¹; Mohammed H. Modi² ; Pariksha Malik³ ; R. K. Bommali ⁴; Pankaj Srivastava³ ; Santanu Ghosh³

1. Tech Univ Munich, Sch Computat Informat & Technol, Dept Elect Engn, Munich, Germany
2. Raja Ramanna Ctr Adv Technol, Indore 452013, India
3. Indian Inst Technol Delhi, Dept Phys, Delhi 110016, India
4. Department of Physics, St. Xavier's College Ranchi, Ranchi University, Ranchi 834001, Jharkhand, India

Abstract

We report the effect of the stoichiometry (from Si-rich to N-rich) of PECVD-grown a-SiNx:H thin films on their optical properties in the soft x-ray regime. The stoichiometry ($x = [N]/[Si]$) of thin films varied from 0.25 to 1.48 with the control of the flow of precursor gases. The soft x-ray reflectivity was performed in the vicinity of the Si L-2,L-3 absorption edge energy region to evaluate the soft x-ray optical behavior of these non-stoichiometric thin films. Reflectivity analysis suggests the possible tunability of optical constants of a-SiNx:H thin films with stoichiometry. N-rich a-SiNx:H shows promising optical constant values comparable to widely used SiC for the application of soft x-ray/extreme ultraviolet (EUV) mirrors and for masks in next-generation EUV-based 13.5 nm lithography technology.

Keywords- *silicon-nitride, filmsheavy-ion irradiation optical propertiesthin*

Research article - 02

K. Bommali ; Harsh Gupta ; Aman Singh ; Rafael Perez Casero ; Saif Ahmad Khan ; P. Srivastava; S. Ghosh; Evolution of nanotracks in silicon nitride under intense electronic excitation: Role of H evolution and a concomitant dynamic electronic energy loss, J. Appl. Phys. 137, 205303 (2025), **Publisher: AIP.**

Evolution of nanotracks in silicon nitride under intense electronic excitation: Role of H evolution and a concomitant dynamic electronic energy loss

**R. K. Bommali¹; Harsh Gupta² ; Aman Singh² ; Rafael Perez Casero⁴ ; Saif Ahmad Khan⁵;
P. Srivastava⁶; S. Ghosh⁶**

1. Department of Physics, , St Xavier's College, Ranchi 834001, India
2. Tech Univ Munich, Sch Computat Informat & Technol, Dept Elect Engn, Munich, Germany
3. Leibniz Inst Solid State & Mat Res Dresden, D-01069 Dresden, Germany
4. Univ Autonoma Madrid, Dept Appl Phys, Madrid 28049, Spain
5. Interuniv Accelerator Ctr IUAC, Mat Sci Div, Aruna Asaf Ali Marg, New Delhi 110067, India
6. Indian Inst Technol Delhi, Dept Phys, Nanotech Lab, New Delhi 110016, India

Abstract

Exposure to intense electronic excitation in PECVD-grown amorphous hydrogenated silicon nitride (a-SiN_x:H) thin films with 100 MeV Ni⁷⁺ results in the formation of continuous nanoscale ion track structures at the lower fluence of 5×10^{12} ions/cm², whereas at the higher fluence of 1×10^{14} ions/cm², the track structures fragment into discontinuous ion track-like structures. Concomitantly, the diameter of the ion tracks is also found to increase with fluence. The observation of the discontinuous ion track-like structures at the high fluence of 1×10^{14} ions/cm² suggests that higher fluence irradiation may not always lead to dissolution of the microstructure formed at lower fluence. The results are understood on the basis of a dynamic electronic energy loss (S-e) during the course of irradiation and a continuously evolving density resulting from the out-diffusion of hydrogen from the a-SiN_x:H films. The proposed mechanism of ion track evolution is supported by the thermal spike simulations. (c) 2025 Author(s). All article content, except where otherwise noted, is licensed under a Creative Commons Attribution-NonCommercial-NoDerivs 4.0 International (CC BY-NC-ND) license.

Keywords- *silicon-nitride, filmsheavy-ion irradiation optical propertiesthin*

Research article - 03

R. K. Bommali; Rajesh Kumar; H. Gupta; D. Topwal; S. Ghosh; P. Srivastava; N Sub-surface incorporation of Ag ions in a-SiNx:H for tunable plasmonic response, AIP Conf. Proc. 3196, 050001 (2024), **Publisher: AIP.**

Sub-surface incorporation of Ag ions in a-SiNx:H for tunable plasmonic response

R. K. Bommali¹; Rajesh Kumar¹; H. Gupta²; D. Topwal³; S. Ghosh⁴; P. Srivastava⁴

1. Department of Physics, St. Xavier's College Ranchi, Ranchi University, Ranchi 834001, Jharkhand, India
2. TUM School of Computation, Information and Technology, Department of Electrical Engineering, Technical University of Munich-Garching, Garching, Germany
3. Institute of Physics Bhubaneswar, Bhubaneswar, India
4. Department of Physics, Indian Institute of Technology Delhi, Hauz Khas, New Delhi, India

Abstract

Ion implantation was employed for the growth of embedded silver nanoparticles (NPs) in amorphous hydrogenated silicon nitride (a-SiNx:H) thin films. Crystalline nanoparticles are found to grow in the as-implanted samples without the requirement of an annealing step. The NPs exhibit absorption due to Localized Surface Plasmon Resonance (LSPR). The LSPR peak position, width and intensity, are found depend on the stoichiometry of a-SiNx:H and the implantation energy. A maximum LSPR red shift from 390 nm to 470 nm was obtained with changes in the composition of the host medium..

Keywords- *Plasmonics, Ion implantation, Thin films, Nanoparticle, Stoichiometry*

Conference/Seminar-1

- Participated and presented a paper entitled “**Sub-surface incorporation of Ag ions in a-SiNx:H for tunable plasmonic response**” in the Two-day international conference named “**1ST INTERNATIONAL CONFERENCE ON ADVANCES IN NOVEL MATERIALS: Towards Sustainable Future (ICAN-24)**”, from 20th Jan to 23th Jan 2024, organized by Department of Physics, St. Xavier's College, Ranchi.

Dr. Bharti Singh Raipat

Associate Professor

Department of Zoology

Email ID : braipat@gmail.com

Scopus ID- 55779441500



Research papers - 05

- Total No. of Book: 01
- Total Paper Presented in Seminar- 01

Research article - 01

International Journal of Entomology Research

www.entomologyjournals.com, ISSN: 2455-4758, Received: 17-09-2024, Accepted: 18-10-2024, Published: 02-11-2024, Volume 9, Issue 11, 2024, Page No. 1-7

Morphological study and DNA barcoding of *Junonia atlites* collected from Jharkhand state of India

Kumar Manoj¹, Priya Anshu¹, Ranjan Rakesh¹, Prasad Sinha Manoranjan², Raipat Bharti Singh^{1*}

1. Department of Zoology, St. Xavier's College, Ranchi, Jharkhand, India
2. Department of Zoology, Ranchi University, Ranchi, Jharkhand, India

Abstract

Butterflies provide many ecosystem services including pollination, role in increasing biodiversity, acting as food source for other organisms such as birds, reptiles, amphibians etc. They are also sensitive to environmental change, so their numbers can indicate the health of environment. Keeping these apprehensions in mind, the present work was undertaken to perform morpho-molecular study of *Junonia atlites* belonging to Nymphalidae. The butterflies of the Jharkhand state of India are very poorly studied, some preliminary works from this region are just limited to preparation of checklist and hobby studies lacking any scientific explanation and validation. In this work 10 sites from Jharkhand were surveyed for morpho-molecular studies on *Junonia atlites*, the evolutionary relationships among the studied specimens were determined following the sequencing of CO¹ gene, followed by preparation of distance matrix and phylogenetic tree. Significant variation was exhibited by specimen collected from Horhap Forest and St. Xavier's College, Ranchi when compared with the other eight specimens, which is evident by the matrix score and phylogenetic tree analysis.

Keywords: *Junonia atlites*, morphomolecular, morphoanatomical, distance matrix, phylogenetic tree, blast

Research article 2 Manoj K et al. (2024), *Notulae Scientia Biologicae*, Volume 16, Issue 4, Article number 12079, DOI:10.15835/nsb16412079

Research Article -02

Morphomolecular study on the flat-faced longhorn beetle *Batocera rufomaculata* (De Geer, 1775) from Rehla, Palamu, Jharkhand, India

Kumar MANOJ¹, Ranjan RAKESH¹, Kumari NEHA², Singh R. BHARTI¹, Prasad S. MANORANJAN^{3*}

1. St. Xavier's College, Department of Zoology, Ranchi – 834001, Jharkhand, India; dr17mk@gmail.com(corresponding author); rakeshranjanlal08@gmail.com; braipat@gmail.com
2. LF – 14, Harmu Housing Colony, Harmu, Ranchi – 834002, Jharkhand, India; rajsneha321@gmail.com
3. Ranchi University, Department of Zoology, Ranchi – 834008, Jharkhand, India; dr.mp.sinha@gmail.com

Abstract

Batocera rufomaculata, often known as the 'mango stem borer' or 'fig borer', is a serious pest of fig, mango, guava, jackfruit, pomegranate, and walnut in many parts of the world. Its infestations can result in reduced yields and even tree mortality. The larvae, which dig into the tree's sub-cortex before moving deeper into the tree, cause the most harm. Continuous tunnelling weakens the wood, causing branches to break or the main stem to fall. Adults munch on green growth tips and twig bark. Their dispersion pattern and adaptability must be properly understood in order to regulate them. This study expands distributional pattern of *B. rufomaculata* found during a routine field survey in the Rehla region in the Palamu district of Jharkhand State, India. Morphological features have been described coupled with the isolation, amplification and sequencing of Mitochondrially encoded cytochrome C oxidase, subunit 1 gene, and its analysis based on BLASTn search. Accession id LC820410 of 643 bp long nucleotide sequence of CO1 has been presented. Distance matrix and phylogenetic tree were constructed using MEGA X software to establish intra-species and inter-species phylogeny and to get pairwise genetic-differences among the selected 20 strains species of genus *Batocera* including species *Rufomaculata*, *Rufus*, *Celebiana*, and *Linolotata*.

Keywords: beetle; COX1; distance matrix; genome sequencing; new record; phylogeny

Research article - 03

The Bioscan- 20(1): 239-245, 2025, www.thebioscan.com

TAXONOMY AND PHYLOGENY OF *Limnodrilus hoffmeisteri*, Claparède, 1862 BELONGING TO FAMILY TUBIFICIDAE d' Udekem, FROM DIFFERENT WATERBODIES OF JHARKHAND BASED ON DNA BARCODING

Rakesh Ranjan¹, Manoj Kumar¹, Rohit Srivastava², Bharti Singh Raipat¹ and Manoranjan Prasad Sinha²

1. Department of Zoology, St. Xavier's College, Ranchi-834001, Jharkhand
2. Department of Zoology, Ranchi University, Ranchi-834002, Jharkhand

Corresponding Author: rakeshranjanlal08@gmail.com

DOI: <https://doi.org/10.63001/tbs.2025.v20.i01.pp239-245>

Received on: 17-11-2024, **Accepted on:** 20-12-2024, **Published on:** 31-01-2025

Abstract

Aquatic Oligochaetes were collected from different habitats located in different districts of Jharkhand. Specimens of *Limnodrilus hoffmeisteri*, Claparède, 1862 was examined in details for ascertaining its taxonomy and phylogeny. Apart from the morphological details, the molecular study based on DNA barcoding was done for the first time for the specimen from this region. Based on the BLASTn results, the specimen was identified as *Limnodrilus hoffmeisteri*, after which the 18s rRNA nucleotide sequence was submitted to DNA databank of Japan and accession ID LC843736 was obtained. The sequence was

used to prepare the distance matrix and phylogenetic tree using MEGA X software. The matrix score ranged from a minimum of 0.00000 to a maximum of 0.00329. The Ranchi strain of *Limnodrilus hoffmeisteri*(LC843736.1) differed from that of the other 10 (already available in GenBank with a matrix value of 0.00329 in each case). This indicates that the strain of *Limnodrilus hoffmeisteri* being reported by us from this region may be from an entirely different genetic pool as compared to the other strains selected in this study. From the phylogenetic tree it can be easily seen that the Ranchi strain lies singly in a separate clade from the selected 10 strains which fall in another clade.

Keywords: *Limnodrilus hoffmeisteri*, morphology, DNA barcoding, distance matrix, phylogenetic tree, Jharkhand.

Vol.16 / Issue 89 / April 2025, International Bimonthly (Print) – Open Access

ISSN: 0976 – 0997

Research article - 04

REVIEW ARTICLE

Molecular Taxonomy and Phylogeny of Oligochaetes – A Concise Review

Rakesh Ranjan¹, Manoj Kumar², Manoranjan Prasad Sinha³ and Bharti Singh Raipat^{4}*

1. Research Scholar, Department of Zoology, St. Xavier's College (Autonomous), (Affiliated to Ranchi University), Ranchi, Jharkhand, India.
2. D.Sc Research Scholar, Department of Zoology, St. Xavier's College (Autonomous), (Affiliated to Ranchi University), Ranchi, Jharkhand, India.
3. Professor (Rtd.), University Department of Zoology, Ranchi University, Ranchi, Jharkhand, India.
4. Associate Professor, Department of Zoology, St. Xavier's College (Autonomous), (Affiliated to Ranchi University), Ranchi, Jharkhand, India.

Received: 01 Nov 2024, **Revised:** 05 Jan 2025, **Accepted:** 25 Feb 2025

Abstract

For a long time, analyses of oligochaete phylogeny were typified by an intuitive, narrative method, just like every other systematic biology after the development of evolutionary theory. The workers' subjective assessment of the available evidence was the basis for the phylogenetic hypotheses. The idea of an octogonadal progenitor of all oligochaetes is a recurring topic in his phylogenetic reconstructions. The hexa- or tetragonadal patterns observed in most recent oligochaetes are therefore regarded as the outcome of reduction of different pairs of gonads in a basic octogonadal form. Systematics has been transformed, or at least its potential has been greatly enhanced, since the mid-1990s by the development of new, effective techniques for DNA sequencing and analysis. Many of the concerns surrounding clitellate phylogeny have yet to be definitively addressed by molecular systematics, but we now have the opportunity to examine some initial efforts in this direction.

Keywords: DNA barcoding, phylogeny, oligochaetes

Research article - 05

ejp mr, 2025, 12(5), 698-700

EUROPEAN JOURNAL OF PHARMACEUTICAL AND MEDICAL RESEARCH

www.ejp mr.com, SJIF Impact Factor 7.065, Research Article, ISSN 2394-3211

A NEW SIMPLE METHOD FOR DETERMINING VIABILITY OF YEAST CELLS VIA DYE EXCLUSION ASSAY

Manoj Kumar^{1x}, Rakesh Ranjan¹, Julian Ekka¹, Manoranjan Prasad Sinha² and Bharti Singh Raipat^{2*}

1. Department of Zoology, St. Xavier's College, Ranchi – 834001, Jharkhand, INDIA.
2. Department of Zoology, St. Xavier's College, Ranchi – 834001, Jharkhand, INDIA.
3. Department of Zoology, St. Xavier's College, Ranchi – 834001, Jharkhand, INDIA.
4. Department of Zoology, Ranchi University, Ranchi – 834008, Jharkhand, INDIA.
5. Department of Zoology, St. Xavier's College, Ranchi – 834001, Jharkhand, INDIA.

Article Received on 22/03/2025, Revised on 12/04/2025, Accepted on 02/05/2025

Abstract

Aim: This article describes a novel, easy-to-use technique for using the dye exclusion experiment to assess the vitality of yeast cells.

Methods: Yeast cells were propagated and suspended in a solution of trypan blue and phosphate buffered saline. After that, the suspension was put into the Neubauer chamber for analysis.

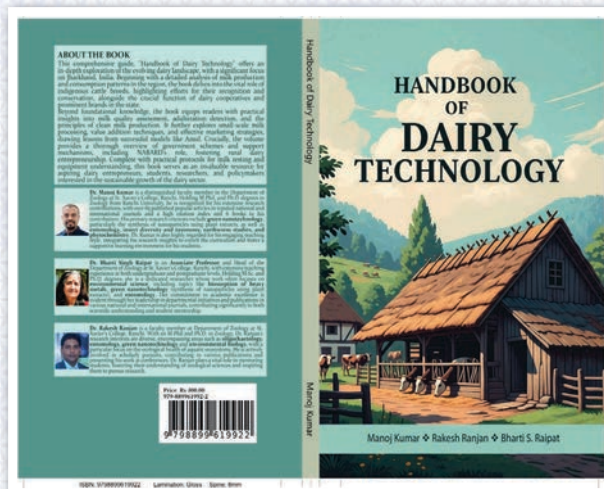
Results: The living cells showed no color; that is, they repelled the dye, whereas the dead cells looked blue, since the cell membrane of dead cells allowed the entry of the dye. The viable (live) cells present in a suspension can be quantified following an exclusion test employed in this article.

Conclusion: The outcome is based on the fact that intact cell membranes in living cells prevent the entry of certain dyes, such trypan blue. In this paper, we report a simple trypan blue dye-exclusion method to determine the viability of yeast cells.

Keywords: yeast, dye exclusion assay, trypan blue, viability test

Books Published:

Kumar, Manoj, Rakesh Ranjan, and Bharti S. Raipat. Handbook of Dairy Technology. 2025. ISBN: 9788899619922.



Papers Presented in Seminars/Conferences (2022–2025)

1. 2022 – International Conference on Environment, Forestry and Sustainable Agriculture, St. Xavier's College, Ranchi (14–16 Nov 2022).

Dr. N. Venkat Appa Rao

Email: venkatapparao@sxcran.org

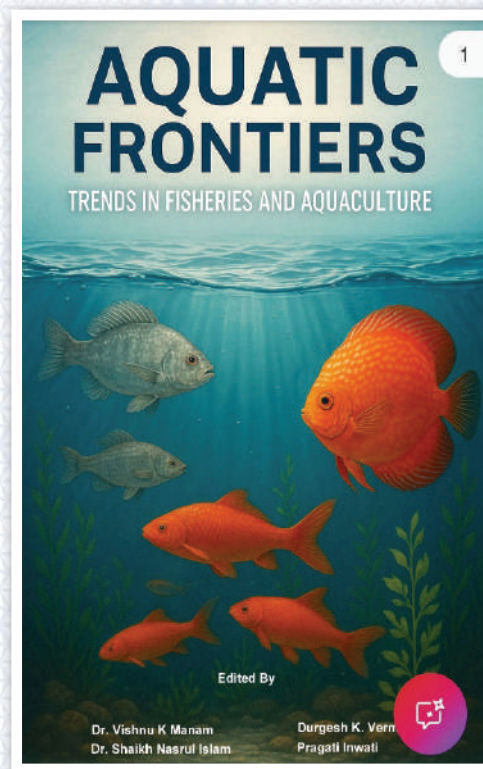
Department of Zoology

Associate Professor



Book Chapter –

The Ecological Consequences of Invasive Fish Species in India
Aquatic Frontiers: Trends in Fisheries and Aquaculture, ISSN –
978-81-978386-1-3



Ph.D. Supervision

Sl No.	Name of Research Scholar	Topic	Date of Registration
1	Dolly Krishnan (Co-Guide)	Assessment of Microplastics in Aquatic Ecosystems of Ranchi (Select stations of Subarnarekha and Kanke Dam): Occurrence and Toxic Effects on <i>Clarias batrachus</i> (Linn)	19.05.2023
2	Uday Singh Pradhan	Role of Testosterone, Estradiol and Prolactin in Cortisol secretion in an air breathing Teleost, <i>Clarias batrachus</i>	28/11/2022

Name of the Faculty - **Dr. Ritesh Kumar Shukla**

Department: **Zoology**

ORCID ID- 0000-0002-6105-7786

Email- riteshshukla@sxcran.org



Research Articles / Paper Publications: 02

1. Editorial Article: Gautam LK, Shukla RK (2024). Promising mRNA vaccine technology in combating infectious disease: a boon to futuristic game changer in medical science. T Appl Biol Chem J; 5(1):1-3. <https://doi.org/10.52679/tabcj.2024.0001>

2. Research article: Dr. Shiv Shankar Prasad, **Dr. Ritesh Kr. Shukla** et.al. (23. 07.2023).

Published a paper entitle “Paenibacillus dendritiformis strain SXCR2 16S ribosomal RNA gene, partial sequence” on National Library of Medicine at National Centre for Biotechnology Information (NCBI, USA). Accession No. OR346237 (GenBank) (ncbi.nlm.nih.gov).

The Applied Biology & Chemistry Journal



<https://www.theabcjournal.com>

eISSN: 2582-8789



Editorial

Promising mRNA vaccine technology in combating infectious disease: a boon to futuristic game changer in medical science

Lalit Kumar Gautam ^{1, 2}, Ritesh Kumar Shukla ³ ✉

¹Central Sophisticated Instrument Cell (CSIC), Post-Graduate Institute of Medical Education and Research (PGIMER), Chandigarh, India.

²Department of Anatomy and Cell Biology, University of Iowa, Iowa City, USA.

³Department of Zoology, St. Xavier's College, Ranchi, Jharkhand, India.

Published March 31, 2024



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highlights the necessity of ongoing funding and cooperation in the fields of science, regulation, and public health. Accepting this paradigm change could lead to the dawning of a new age in global health security, one that is marked by quick reactions to new threats and fair access to interventions that can save lives.

The development of mRNA vaccines has been a remarkable journey characterized by decades of scientific inquiry and technological advancement. When mRNA vaccines were first developed in the 1990s, they were seen as a promising

Ph. D. Supervision: 02

Sl No.	Name of the Research Scholar	Topic	Date of Registration
1	Atiya Darakshan	Immunohistochemical Mapping of CCK Immunoreactive Cells in Some of the Vital Organs of Clarias batrachus, a Freshwater Teleost'	22nd December 2023
2	Abhishek Kumar Pattak	Immunohistochemical Localisation of Ghrelin Immuno-Reactive Cells in Vital Organs of a Freshwater Teleost Channa punctatus (Bloch, 1973)	4th September 2024.

Patent Awarded from The Patent Office, Government of India: 01

Date: 11/09/2023. Design patent for 'ANIMAL SHELL UPCYCLING MACHINE'.

Design number: 394818-001



Member of Editorial Board and Peer Review Board: 01

Editor and Reviewer, The Applied Biology & Chemistry Journal (TAB CJ), ISSN: 2582-8789 (online)

Paper Presentation in National and International Seminars: 06

- 1st International Conference on Advances in Novel Materials: Towards Sustainable Future**
Organized by : Dept. of Physics, St. Xavier's College, Ranchi from 20th-22nd January, 2024
Title: Enhanced production of Exopolysaccharide by newly isolated microbes.
- International Conference on Environment, Aquaculture and Sustainable Agriculture**
Organized by : St. Xavier's College, Ranchi, Jharkhand and International Foundation for Environment and Ecology, Kolkata. Date: 22-23-24th September 2023

Title: Sustainable Uses of *Lamellidens marginalis* (Lamarck 1819): A Need of the Hour

3. **Co-Presenter in Poster presentation, “Awarded Certificate of Appreciation” : International Conference on Environment, Aquaculture and Sustainable Agriculture**

Organized by: St. Xavier's College, Ranchi, Jharkhand and International Foundation for Environment and Ecology, Kolkata. Date: **22-23-24th September 2023**

Title: A Freshwater Ecosystem Engineer, *Lamellidens marginalis* (Lamarck 1819): It's Ecological Roles and Conservational Challenges

4. **Two-Day National Conference (Multidisciplinary) & Symposium on Climate Change: Challenges and Opportunities**

Organized by: University Department of Zoology, Ranchi University, Ranchi on **25-26th May 2023**.

Title: Multidisciplinary Approach to Bloom the Sustainable Aquaculture Practice of Freshwater Pearl Culture for the Attainment of SDGs.

5. **An Interdisciplinary International Conference on Emerging Sustainable Technologies, Policies and Methodologies (IICESTPM-2023).**

Organized by: Marwari College, Ranchi University Ranchi. **12-13th May, 2023.**

Title: Freshwater Pearl Culture Technology Using *Lamellidens marginalis*: A Silver lining for Achieving Sustainable Development.

6. **International Conference on Environment, Forestry and Sustainable Agriculture**

Organized by : International Academy of Science and Research and St. Xavier's College, Ranchi, Jharkhand Date: **14-15-16th November 2022.**

Title: “Freshwater Pearl Farming: An Emerging Trend in Sustainable Agricultural Practice”.

Invited Talk/Resource Person/Guest Lecture/Special Lecture in Institutions: 07

1. **Delivered Invited Lecture as a Resource Person/Subject Expert in Training Program** on “Pearl Culture & Its Production” at Fish Farmer Training Centre, Ranchi on **09th March 2025**.
2. **Delivered Invited Lecture as a Resource Person/Subject Expert in One Day Workshop/Training Program** on “Freshwater Pearl Culture for Entrepreneurship Development” at Jamshedpur Women's University, Jamshedpur on **08th March 2025**.
3. **Delivered Invited Lecture as a Resource Person in One Day Seminar on topic “Pearl Culture: A step towards Blue Revolution and Entrepreneurship Development”** at Gossner College, Ranchi University, Ranchi on **20th Feb. 2025**
4. **Delivered a talk as eminent speaker** in Pearl Day celebration organized by Society for Earth Observation and Conservation (SEOC) in collaboration IQAC- St. Xavier's College, Ranchi on **18th December 2024**.
5. **Delivered a lecture series as an invited subject expert in a training program on ‘Pearl Culture & Its Production’** at Fish Farmer Training Centre, Ranchi, Directorate of Fisheries, Govt. of Jharkhand from **23.09.2024 to 27.09.2024**.
6. **Delivered an Invited Lecture on “Freshwater Pearl Culture Technology”** in the department of Botany and Zoology, Kartik Oraon College, Gumla (Ranchi University, Ranchi) on **7th August 2023**.
7. **Delivered an Invited Lecture on “Carrier Opportunities in Life Sciences”** for students of Botany and Zoology at RLSY College, Ranchi University Ranchi on **21st August 2023**.

Dr. Priya Srivastava

Department of Zoology

Email- priyasrivastava@sxcran.org



Research Article - 01

The indispensable role of animal science in drug discovery : a comprehensive review, January 2024, Journal of Experimental Zoology, India, 27(1):1313-1318, doi: 10.51470/jez.2024.27.1.1313.

The indispensable role of animal science in drug discovery : a comprehensive review

Abstract

The indispensable role of Animal Science in drug discovery: A comprehensive review” delves into the crucial contribution of animal science in the field of drug development and discovery. This comprehensive review explores the multifaceted aspects of animal science that make it an indispensable component of the drug discovery process. By examining the utilization of various animal models, from invertebrates to mammals, this paper highlights the significance of animal research in elucidating mechanisms of disease, studying drug efficacy, toxicity and understanding pharmacokinetics and pharmacodynamics. Additionally, it discusses the ethical considerations and regulations associated with animal experimentation, emphasizing the importance of animal welfare and the implementation of alternative methods when feasible. Moreover, the review sheds light on emerging technologies and approaches, such as in silico modeling and organ-on-a-chip systems, that aim to reduce animal usage while

maintaining high-quality research outcomes. Overall, this review paper provides a comprehensive understanding of how animal science continues to play an indispensable role in driving drug discovery, improving human and animal health, and shaping the future of medicine.

Keywords : Animal Science, drug discovery, indispensable role, comprehensive review, pharmaceuticals, biomedical research.

Research Article - 02

Unleashing the potential of millets promoting nutritious grains as vital cereal staples during the International year of millets: a review, August 2023, International Journal of Plant & Soil science, 35(18):1860-1871, doi:

10.9734/ijpss/2023/v35i183469.

Unleashing the Potential of Millets Promoting Nutritious Grains as Vital Cereal Staples during the International Year of Millets: A Review

Abstract

This comprehensive review highlights the multifaceted potential of millets as a nutritional powerhouse, a sustainable agricultural choice, and a means to tackle global nutritional challenges. Coinciding with the International Year of Millets, the paper focuses on the significance of millets as highly nutritious and resilient cereal staples that can address both food security and malnutrition issues, while enhancing agricultural sustainability. A comparative analysis of the nutritional composition of various millet types

against major cereal crops reveals their superior micronutrient profile, protein content, and health benefits. Their role in combating micronutrient deficiencies such as iron, zinc, and vitamin A, as well as non-communicable diseases like diabetes, obesity, and cardiovascular diseases is underlined. Moreover, their immune-supporting properties are discussed. The climate resilience of millets and their potential to diversify agricultural systems while enhancing farmers' incomes are considered. The review also addresses challenges in promoting millet consumption and production, including perception issues, supply chain barriers, and policy constraints. Strategies to maximize millet potential, like enhancing value chains, promoting dietary diversification, incorporating millets into school feeding programs, and utilizing technological advancements for improved varieties are proposed. Policy recommendations emphasize the need for institutional support for millet farmers, raising consumer awareness, and strengthening research and development in millet agriculture. This paper serves as a call to action for researchers, policymakers, and stakeholders to promote millets as a key component in our food systems to tackle nutritional challenges and enhance agricultural sustainability.

Keywords: *Millets; nutritional composition; food security; nutritional challenges; climate Resilience.*

Research Article - 03

Biochar's influence on soil microorganisms: understanding the impacts and mechanisms, July 2023, International Journal of plant & soil science, 35(18):455-464, doi: 10.9734/ijpss/2023/v35i183310 lab: drishty katiyar's lab Biochar's Influence on Soil Microorganisms: Understanding the Impacts and Mechanisms

Abstract

Biochar, the carbon-rich material produced from biomass pyrolysis, has garnered significant attention and research interest owing to its myriad of potential benefits for soil enhancement. These benefits range from increasing soil carbon storage, boosting soil fertility, to transforming and fixing pollutants in soil, all of which serve to ameliorate the overall soil environment. The impact of these improvements extends to the metabolic activities and community structure of soil microorganisms, either directly or indirectly, creating ripple effects on soil health. This paper embarks on a thorough review of biochar's effects on various soil aspects. These include the soil's physicochemical properties, such as its structure, composition, and reaction properties, and how biochar can influence these to improve the soil environment. It also explores how biochar affects enzyme activities in the soil that are crucial for various biochemical processes, as well as nutrients vital for plant growth and development. Importantly, the ability of biochar to interact with contaminants, rendering them harmless or less toxic, is examined, alongside an investigation into the related microbial activities that are influenced by these changes. This work also aims to summarise the potential mechanisms of interaction between biochar and microorganisms, providing a clearer understanding of how biochar influences the soil microbiome. It discusses the potential risks associated with biochar use, such as the release of harmful substances or unintended shifts in microbial communities, emphasizing the importance of a balanced view towards biochar application. Overall, the aim of this study is to lay a robust theoretical groundwork for future research in this field, contributing towards a better understanding and utilisation of biochar for soil enhancement and sustainable agriculture.

Keywords: *Biochar; soil enhancement; microbiome; contaminant; sustainable agriculture.*

Research Article - 04

Physico-chemical analysis of soils in ranchi, July 2023, doi: 10.24941/ ijcr.45499.06.2023

Physico-chemical analysis of soils in ranchi

Abstract

The growth of vegetation of any area depends on many factors. One of the most important factor is soil which is of various types. In this research paper, the physico-chemical attributes which have been chosen are colour, texture, pH, total moisture content, organic carbon, chloride content and calcium carbonate, etc. These samples have been taken from 5 different areas of Ranchi district. Collection of soil samples is the first step which has been done in a proper manner. The samples have been collected upto the depth of 0-25 cm free from any litter and pebbles. The colour of the samples were light brown to dark brown. The texture of the soil sample varied from sandy loam to silty loam. The pH of the collected samples varied between 6.9 to 7.4. The moisture content of these soils ranged from 19% to 47%. The chloride content varies from 110.05mg/l to 532.5mg/l. The organic matter in the samples were moderate to higher with values ranging from 0.20% to 2.81%. The calcium carbonate content of these areas varied from 6% to 13.5%.

Research Article - 05

Synergizing different control methods for sustainable management of parthenium weed (*parthenium hysterophorus*) (integrated pest management strategies), July 2023, Journal of experimental Zoology, india, 26(2):2529-2540, doi: 10.51470/jez.2023.26.2.2529. Synergizing different control methods for sustainable management of parthenium weed (*parthenium hysterophorus*) (integrated pest management strategies)

Abstract

Parthenium hysterophorus L. of the Asteraceae (tribe: Heliantheae), is an erect and heavily branching annual or ephemeral herb most known for its function as an environmental, medical, and agricultural hazard. It is thought to have been transported into India and Australia from North America, and it has recently emerged as the sixth most destructive weed in Africa, Asia and Australia. The purpose of this review is to give general information about parthenium's physiology, distribution, adverse effect, and management. Parthenium weed control has been attempted using many ways, however, no one management option is appropriate for its management and there is a need to integrate diverse management options. The only way to successfully manage this weed is with an integrated approach that includes biological control as a crucial component. The current and potential use of natural enemies as traditional biological control agents are discussed, as well as the work done over the last 20 years on screening and evaluating both insect and fungus agents. It is determined that successful management of this weed can only be done by an integrated approach, with biological control playing a considerable role due to its costeffectiveness, environmental safety and sustainability.

Research Article - 06

Environmental sustainability and food security of traditional agricultural practices in India: a review, June 2023, International Journal of environment and climate change, 13(8):1847-1856, doi:10.9734/ijecc/2023/v13i82138

Environmental Sustainability and Food Security of Traditional Agricultural Practices in India: A Review

Abstract

This synthesis consolidates current research on sustainable agriculture and its pivotal role in enhancing food security, conserving biodiversity, and mitigating climate change. Sourced from a wide array of references, it accentuates exercises such as organic farming, agroforestry, and diversified farming systems as cornerstone approaches, sustainable agriculture. The potential of these practices is also explored, highlighting the carbon sequestration capacity of agroforestry systems, the environmental advantages of organic farming over conventional methods, and the implications of diversified farming systems on

food security. However, sustainable agriculture still confronts numerous challenges, especially regarding the environmental repercussions of pesticide use and the barriers hindering the adoption of sustainable farming practices. The substantial role of traditional agricultural practices, which often reflect fundamentals of sustainability and resource preservation, is also underscored. The transformative impact of integrated aquaculture-agriculture systems on small-scale farms in Southern and Southeastern Asia is with Farmer Field School experiences worldwide. Critically, the synthesis acknowledges the daunting task of feeding a burgeoning global population and the environmental ramifications of land utilization. Synthesis concludes by asserting that future research and policy must perpetually focus on these issues, aiming to generate innovative strategies for sustainable agriculture and to bolster the resilience of farming systems in the face of climate change.

Keywords: *Sustainable agriculture, traditional farming practices, agroforestry, organic farming, food security*

Research Article - 07

-Impact of nano and non-nano fertilizers on rice quality and productivity: a review, June 2023, International Journal of environment and climate change, 13(8):973-987, doi: 10.9734/ijecc/2023/v13i82035 Impact of Nano and Non-nano Fertilizers on Rice Quality and Productivity: A Review

Abstract

It aims to examine the impact of nano and non-nano fertilizers on rice quality and productivity. Rice is a staple food crop for a large portion of the global population, the use of fertilizers is essential for optimizing yields and maintaining food security. The emergence of nano-fertilizers presents new opportunities for enhancing nutrient use efficiency, plant growth, and rice quality. However, limitations in existing research, such as the lack of comparative studies and methodological inconsistencies, make it difficult to draw definitive conclusions about the relative merits of nano and non-nano fertilizers. The implementation of nano-fertilizers faces challenges related to cost, accessibility, regulatory frameworks, and public perception. Future research should focus on long-term field studies, investigating potential risks and benefits, and developing sustainable and cost-effective formulations. By addressing these challenges and knowledge gaps, this review seeks to provide a comprehensive understanding of the potential impacts of nano and non-nano fertilizers on rice cultivation and contribute to the development of sustainable agricultural practices.

Keywords: *Nano fertilizers; non-nano fertilizers; rice quality; rice productivity; comprehensive review.*

Research Article - 08

Soil microbes expertly balancing nutrient demands and environmental preservation and ensuring the delicate stability of our ecosystems- a review, July 2023, International Journal of plant & soil science, doi: 10.9734/ijpss/2023/v35i183363 lab: kushal sachan's lab.

Soil Microbes Expertly Balancing Nutrient Demands and Environmental Preservation and Ensuring the Delicate Stability of Our Ecosystems- A Review

Abstract

It scrutinizes the critical role of soil microbes in balancing nutrient demands and environmental preservation, thereby ensuring the stability of our ecosystems. The document elucidates how these microscopic organisms play a pivotal role in various ecosystem processes such as nutrient cycling, organic matter decomposition, and the promotion of plant health. It details how their metabolic processes influence soil fertility and plant growth, maintaining a fine equilibrium between the soil's nutrient demand and environmental conservation. The review stresses the influence of microbes on soil health and their

potential role in mitigating climate change through carbon sequestration, demonstrating their significance beyond primary production. The correlation between microbial communities, climate change, and soil degradation is emphasized, showing how these factors interact in a complex, interconnected network. Modern microbial management strategies, highlighting sustainable methods to exploit their potential in agriculture and environmental conservation. It advocates for more research into soil microbiome functionality, with a special focus on the impact of human activities and climate change. By emphasizing that soil microbes, although invisible, carry profound implications for global sustainability and food security. By optimizing microbial functions, we can improve soil health and fertility, contributing significantly to ecosystem resilience and stability.

Keywords: *Organic matter decomposition; soil microbes; soil microbial diversity; soil fertility.*

Research Article - 09

Microbes as a promising frontier in drug discovery: a comprehensive exploration of nature's microbial marvels, May 2023, doi: 10.5281/zenodo.8149064.

Microbes as a Promising Frontier in Drug Discovery: A Comprehensive Exploration of Nature's Microbial Marvels

Abstract

Microbes have emerged as a promising frontier in drug discovery, offering a vast and diverse array of bioactive compounds with immense therapeutic potential. This comprehensive review aims to explore the untapped potential of microbes as a rich source of novel drugs, shedding light on their remarkable abilities to produce bioactive metabolites. We delve into the intricate mechanisms by which microbes synthesize and release these compounds, highlighting their unique biosynthetic pathways and the diverse chemical structures they generate. Furthermore, we discuss the innovative approaches employed in the isolation, cultivation, and characterization of microbial strains, enabling the discovery of novel bioactive molecules. Drawing from a wealth of case studies, we showcase the successful translation of microbial discoveries into clinical applications, demonstrating their efficacy in treating various diseases and addressing unmet medical needs. Finally, we explore the prospects and challenges in harnessing the full potential of microbes for drug discovery, emphasizing the importance of interdisciplinary collaborations and technological advancements in this rapidly evolving field.

Keywords: *Microbes, Drug discovery, Bioactive compounds, Biosynthetic pathways, Clinical applications, Interdisciplinary collaborations*

Research Article - 10

Exploring the potential of graphene and graphene oxide as innovative nano carriers for drug delivery, November 2023, doi: 10.51470/bca.2023.23.s1.1571

Exploring the potential of graphene and graphene oxide as innovative nano carriers for drug delivery

Abstract

Graphene and graphene oxide have emerged as promising nanocarriers in the field of drug delivery due to their unique physicochemical properties and biocompatibility. This review provides an overview of the recent advancements in utilizing graphene and graphene oxide as nanocarriers for drug delivery applications. The review covers the synthesis and functionalization of these nanocarriers, focusing on their ability to load and release drugs effectively. Moreover, the biocompatibility and safety considerations associated with their use are explored. The various applications of graphene and graphene oxide nanocarriers in drug delivery are also discussed, highlighting their potential in revolutionizing targeted therapies and

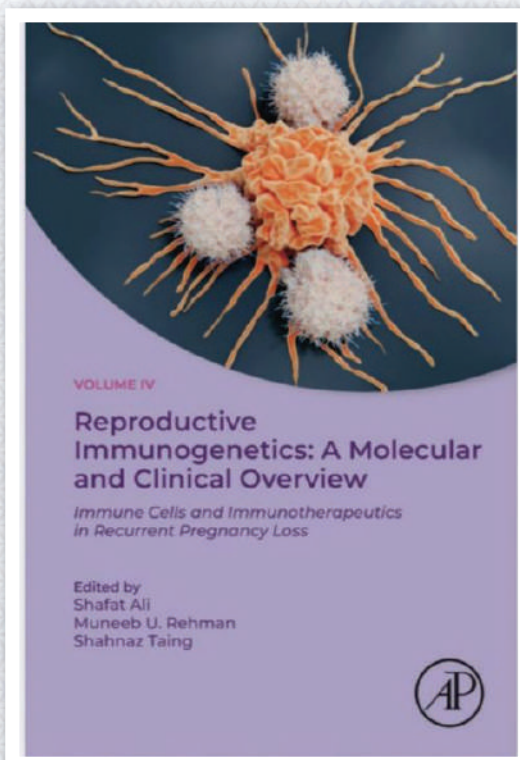
improving therapeutic outcomes. It would highlight the unique properties of these nanomaterials, such as their high surface area, biocompatibility and ability to be functionalized, which make them promising candidates for drug delivery applications. The abstract would summarize key findings regarding the efficiency, targeted delivery capability, and safety profile of graphene-based nanocarriers, emphasizing their potential to revolutionize drug delivery systems and improve therapeutic outcomes.

Keywords: Graphene, graphene oxide, drug delivery, nanocarriers, synthesis, biocompatibility. CARRIERS FOR DRUG DELIVERY

Book/ Book chapter-

Chapter 17- Evidence based new developments in reproductive immunogenetics and future perspectives

This chapter shows that reproductive success is not just about gametes and hormones, but also about the immune and genetic interplay between mother and fetus. Understanding HLA, genetic polymorphisms, and applying advanced immunogenetic testing in ART can improve pregnancy outcomes. The future lies in precision medicine, targeted immunotherapies, and ethical use of genetic technologies.

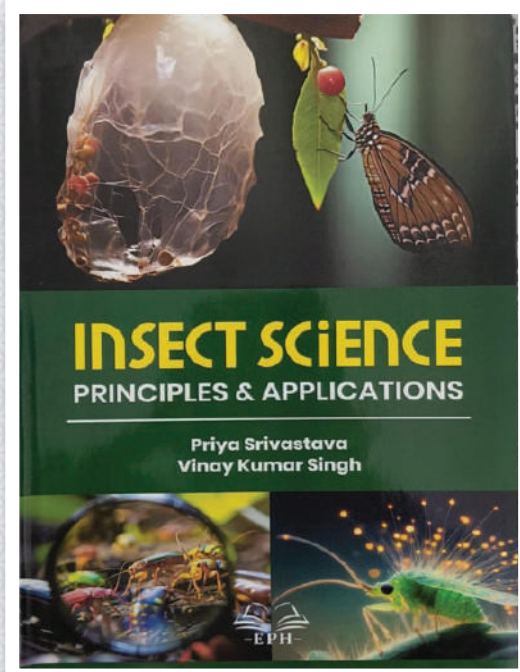


Book published- 01

INSECT SCIENCE

The book “Insect Science: Principles and Applications” broadly deals with the biology, ecology, and applied aspects of insects, explaining their structure, physiology, behavior, diversity, and roles in ecosystems, while also highlighting their economic importance in agriculture, industry, and medicine. It emphasizes both the principles—such as insect anatomy, growth, reproduction, communication, and ecological interactions—and the applications, including pest management, pollination, biological control, and use of insects in biotechnology. Designed for students and researchers, it integrates fundamental science with real-world utility, showing how understanding insects not only deepens biological knowledge but also helps solve practical challenges in food security, health, and environment.

Publisher- Elite Publishing House



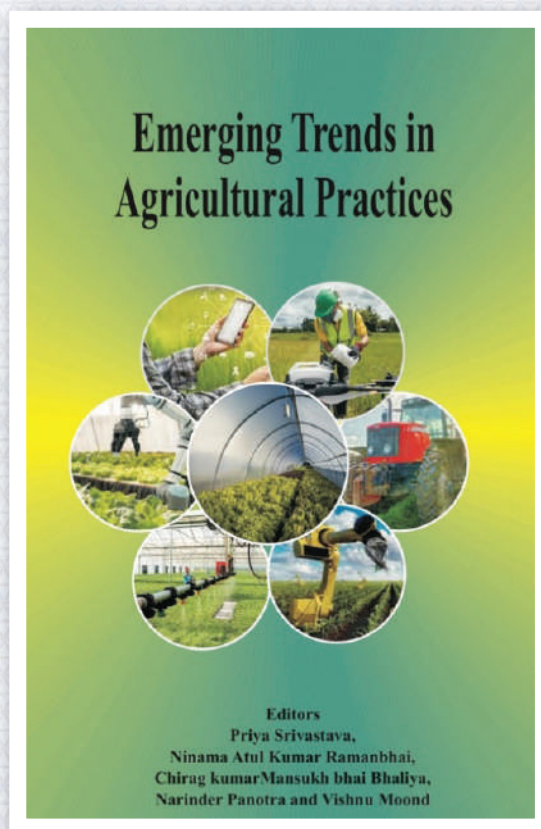
Book published- 02

EMERGING TRENDS IN AGRICULTURAL PRACTICES

Emerging Trends in Agricultural Practices delves into the dynamic landscape of modern agriculture, exploring innovative methodologies, technologies, and sustainable practices that are reshaping the industry. This comprehensive guide navigates the reader through a spectrum of transformative trends,

from precision farming solutions to organic and regenerative practices. With a keen focus on addressing global challenges such as climate change, resource depletion, and food security, this book serves as a beacon for farmers, agronomists, researchers, and policymakers seeking to adapt and thrive in a rapidly evolving agricultural environment. Through in-depth analyses, case studies, and expert insights, readers gain a nuanced understanding of the latest breakthroughs in crop management, soil health, and livestock husbandry. "Emerging Trends in Agricultural Practices" is a must-read for anyone passionate about cultivating a sustainable future for agriculture, blending traditional wisdom with cutting-edge innovations for a resilient and productive tomorrow.

Publisher- ND Global Publishing House



Ph.D. Supervision

Sl no.	Name of research scholar	Topic	Date of Registration
1	Mouli Chakroborty	Synthesis and characterization of green nanoparticles using the extracts of Withania coagulans and its impact on Wistar albino rats	02/07/21
	Vanshika Lohia	Effect of catechin-coated dialdehyde cellulose on the treatment of atherosclerotic lesions in albino rat	03/09/24
	Medha kumari	Studies on the Assessment of Microplastic in the Soil of Some Agricultural Areas of Subarnrekha Origin and its Impact on Earthworm (E. fetida) Species	30/01/25

INTELLECTUAL PROPERTY INDIA
भारतीय औद्योगिक संपत्ति अधिकार विभाग

पेटेंट कार्यालय, भारत सरकार | **The Patent Office, Government Of India**

डिजाइन के पंजीकरण का प्रमाण पत्र | **Certificate of Registration of Design**

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तारीख / Date : 25/09/2024
पारस्परिकता तारीख / Reciprocity Date :
देश / Country :

प्रमाणित किया जाता है कि संलग्न प्रति में वर्णित डिजाइन जो **STYLIZED CONTAINER FOR SAFE AND EFFECTIVE STORAGE OF ENTOMOLOGICAL SPECIMENS** से संबंधित है, का पंजीकरण, श्रेणी 24-02 में 1.Dr. Priya Srivastava 2. Prof. Vinay Kumar Singh के नाम में उपलब्ध संख्या और तारीख में कर लिया गया है।

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डिजाइन अधिनियम, 2000 तथा डिजाइन नियम, 2001 के अन्वयेन प्रावधानों के अनुसार।
In pursuance of and subject to the provisions of the Designs Act, 2000 and the Designs Rules, 2001.

अति नवी की तिथि : 14/11/2024
Date of Issue : 14/11/2024

सहायक पेटेंट, डिजाइन और वाणिज्य चिह्न
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पारस्परिकता तारीख (यदि कोई हो) जिसकी अनुमति दी गई है उसका देश का नाम डिजाइन का वाणिज्यिक पंजीकरण की तारीख से दस वर्षों के लिए होगा जिसका विचार, अधिनियम एवं नियम के विधानों के अन्तर्ग, यदि वर्षों की अवधि के लिए किया जा सके। इस प्रमाण पत्र का उपयोग विवाद कार्यालयों में प्रमाणित करने के लिए नहीं हो सकता है।
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पेटेंट कार्यालय, भारत सरकार | **The Patent Office, Government Of India**

डिजाइन के पंजीकरण का प्रमाण पत्र | **Certificate of Registration of Design**

डिजाइन सं. / Design No. : 388119-001
तारीख / Date : 10/06/2023
पारस्परिकता तारीख / Reciprocity Date :
देश / Country :

प्रमाणित किया जाता है कि संलग्न प्रति में वर्णित डिजाइन जो **AGRICULTURAL DRONE FOR CROP HEALTH MONITORING** से संबंधित है, का पंजीकरण, श्रेणी 15-03 में 1.Mr. Bal Veer Singh 2. Mr. Shakti Singh 3.Dr.Priya Srivastava 4.Dr.Samikhya Bhuyan 5.Dr. Monika Patel 6.Dr.Y. S. Maillem 7.Dr.Vinay Kumar 8.Dr.Lalit Upadhyay के नाम में उपलब्ध संख्या और तारीख में कर लिया गया है।

Certified that the design of which a copy is annexed hereto has been registered as of the number and date given above in class 15-03 in respect of the application of such design to **AGRICULTURAL DRONE FOR CROP HEALTH MONITORING** in the name of 1.Mr. Bal Veer Singh 2. Mr. Shakti Singh 3.Dr.Priya Srivastava 4.Dr.Samikhya Bhuyan 5.Dr. Monika Patel 6.Dr.Y. S. Maillem 7.Dr.Vinay Kumar 8.Dr.Lalit Upadhyay.

डिजाइन अधिनियम, 2000 तथा डिजाइन नियम, 2001 के अन्वयेन प्रावधानों के अनुसार।
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अति नवी की तिथि : 23/08/2023
Date of Issue : 23/08/2023

सहायक पेटेंट, डिजाइन और वाणिज्य चिह्न
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पारस्परिकता तारीख (यदि कोई हो) जिसकी अनुमति दी गई है उसका देश का नाम डिजाइन का वाणिज्यिक पंजीकरण की तारीख से दस वर्षों के लिए होगा जिसका विचार, अधिनियम एवं नियम के विधानों के अन्तर्ग, यदि वर्षों की अवधि के लिए किया जा सके। इस प्रमाण पत्र का उपयोग विवाद कार्यालयों में प्रमाणित करने के लिए नहीं हो सकता है।
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डिजाइन के पंजीकरण का प्रमाण पत्र | **Certificate of Registration of Design**

डिजाइन सं. / Design No. : 396137-001
तारीख / Date : 26/09/2023
पारस्परिकता तारीख / Reciprocity Date :
देश / Country :

प्रमाणित किया जाता है कि संलग्न प्रति में वर्णित डिजाइन जो **MICROWAVE SENSOR BASED SOIL ANALYZER** से संबंधित है, का पंजीकरण, श्रेणी 10-05 में 1.Mr. Bal Veer Singh 2. Dr. N. S. Rana 3.Dr. Priya Srivastava, 4.Dr. Narinder Panotra 5.Dr. C. L. Maurya 6.Dr. Durga Prasad 7.Mr. Hiren Das 8.Dr. Samikhya Bhuyan के नाम में उपलब्ध संख्या और तारीख में कर लिया गया है।

Certified that the design of which a copy is annexed hereto has been registered as of the number and date given above in class 10-05 in respect of the application of such design to **MICROWAVE SENSOR BASED SOIL ANALYZER** in the name of 1.Mr. Bal Veer Singh 2. Dr. N. S. Rana 3.Dr. Priya Srivastava, 4.Dr. Narinder Panotra 5.Dr. C. L. Maurya 6.Dr. Durga Prasad 7.Mr. Hiren Das 8.Dr. Samikhya Bhuyan.

डिजाइन अधिनियम, 2000 तथा डिजाइन नियम, 2001 के अन्वयेन प्रावधानों के अनुसार।
In pursuance of and subject to the provisions of the Designs Act, 2000 and the Designs Rules, 2001.

अति नवी की तिथि : 06/11/2023
Date of Issue : 06/11/2023

सहायक पेटेंट, डिजाइन और वाणिज्य चिह्न
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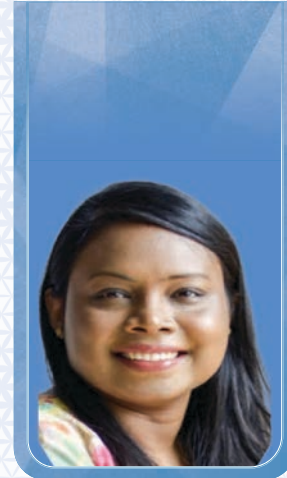
पारस्परिकता तारीख (यदि कोई हो) जिसकी अनुमति दी गई है उसका देश का नाम डिजाइन का वाणिज्यिक पंजीकरण की तारीख से दस वर्षों के लिए होगा जिसका विचार, अधिनियम एवं नियम के विधानों के अन्तर्ग, यदि वर्षों की अवधि के लिए किया जा सके। इस प्रमाण पत्र का उपयोग विवाद कार्यालयों में प्रमाणित करने के लिए नहीं हो सकता है।
The reciprocity date (if any) which has been allowed and the name of the country. Copyright in the design will subsist for ten years from the date of Registration, and may under the terms of the Act and Rules, be extended for a further period of five years. This Certificate is not for use in legal proceedings or for obtaining registration abroad.

Shalini Minz

Assistant Professor (Environmental Science)

Email- shaliniminz31@gmail.com

Research Papers presented at National/ International conferences:



Presented Research paper on “Indigenous knowledge on Ethnobotanical Diversity and its role in the forest conservation in Tribal areas of Jharkhand” at international conference of science, Humanism and the making of modern India Organized by University of Sussex at the India Museum, Kolkata, 9-10 January 2023.

Attended summer course -1 “Finance for Development” at University of Antwerp, Belgium, from 23 / 06/25 to 27/ 06/ 25.

Attended summer course-2- “Energy Transitioning: Purpose, Path and Process” at University of Antwerp, Belgium, from 30/06/25 to 10/ 07 /25.



Social Science



Name of The Faculty/Researcher- Dr. Harishwar Dayal

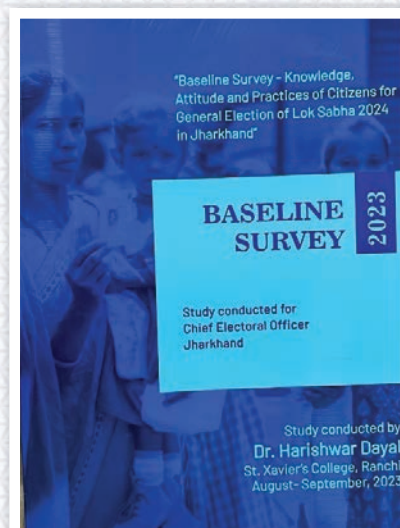
Associate Professor

Department of Economics



RESEARCH PROJECT

1. Baseline Survey-Knowledge, Attitude and Practices of Citizens for the General Election of Lok Sabha 2024 in Jharkhand. The Project was assigned by the Office of the Chief Electoral Officer, Jharkhand. It involved the collection of data from a random sample of all 14 Parliamentary constituencies of Jharkhand (Size of sample 1754), analysis of data and report writing. The Report has been published by the Election Commission and used in deciding the electoral process.



BUDGET AND PRE-BUDGET

1. Made Knowledge Partner for the Pre-Budget Consultation by the Finance Department, Government of Jharkhand vide Letter No. Gyapank 29/B.S.G.-03/2022-23, 42/Budget Dated 16.01.2023. The assignment involved the preparation of a background paper and presentation (PPT), the selection of experts for the pre-budget consultation, documentation of the suggestions provided by the experts, and selection of the suggestions to be incorporated in the budget of the year 2023-24.
2. Made Knowledge Partner for the Pre-Budget Consultation by the Finance Department, Government of Jharkhand vide Letter No. Gyapank 29/B.S.G.-03/2022-23, 776/Budget Dated 04.12.2023. The assignment involved the preparation of a background paper and presentation (PPT), the selection of experts for the pre-budget consultation, documentation of the suggestions provided by the experts, and selection of the suggestions to be incorporated in the budget of the year 2024-25.

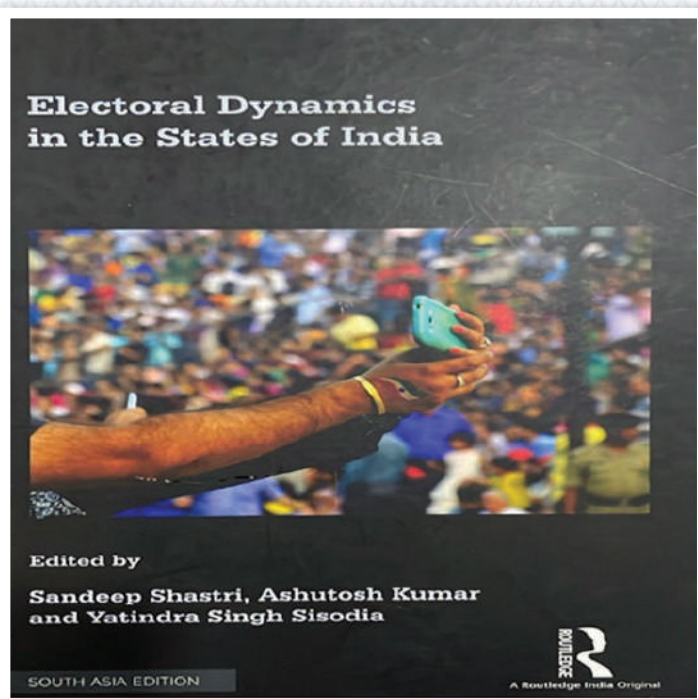
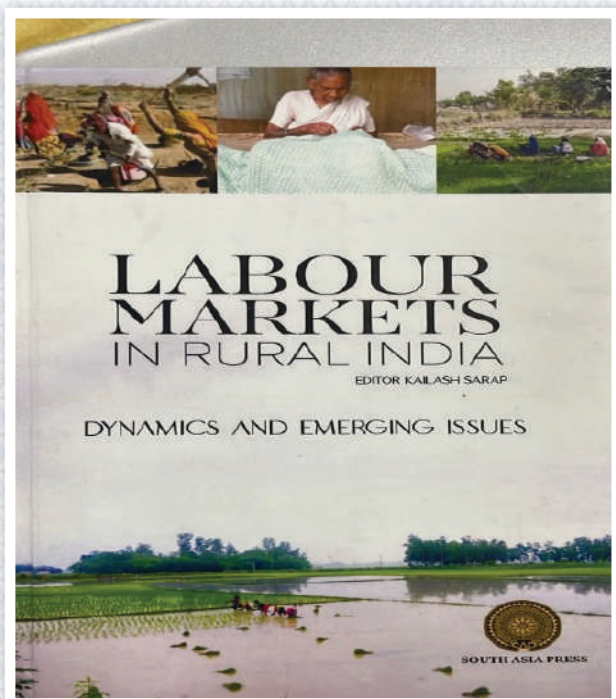
JHARKHAND ECONOMIC SURVEY

1. Team leader and lead Author, Jharkhand Economic Survey, 2022-23, Published by Centre for Fiscal Studies, Department of Planning and Development, Government of Jharkhand.

ARTICLES IN EDITED BOOK: 3

1. 'Credit and Labour Market Interlinkage in Tribal Economy: A Case Study of Jharkhand' in Kailash Sarap edited Labour Markets in Rural India: Dynamics and Emerging Issues, Published by South Asia Press, New Delhi. First Published 2024 ISBN: 978-81-974489-7-3 (Print).
2. 'Jharkhand: The Ascendancy of the BJP as a Dominant Party', in Sandeep Shastri, Ashutosh Kumar and Yatindra Singh Sisodia edited Electoral Dynamics in the States of India, Published by Routledge (Taylor and Francis Group), London and New York. (ISBN: 978-1-032-41785-1(hbk), 978-1-003-15997-1(ebk), DOI: 10.4324/9781003159971) First Published in 2022, Reprint in 2025.

3. 'COVID-19, Lockdown and the Plight of Returned Migrants of Jharkhand' in Kunal Keshri, S. Irudaya Rajan, Kirti Gaur edited COVID- 19 and Labour Migration in India : Evidence from the Pandemic, Published by Routledge (Taylor and Francis Group), London and New York. (ISBN: 978-1-032-007083). Accepted for publication. To be published in December 2025.
4. Chapter 12, COVID-19, Lockdown and the Plight of Return Migrants of Jharkhand



Ph.D. Supervision

- Name of Research Scholar- Sumit Kumar,
- Topic: Effects of COVID-19 on Different Levels of School Education in Jharkhand
- Date of Registration- 24.09.2022

Name of The Faculty - Dr. Marcus Barla

Associate Professor

Department of Economics



Impacts On Climate Change On Tribal Economy: A Study of Jharkhand State of India

AUTHORS :- Marcus Barla (Department of Economics at St. Xavier's College, Ranchi, India) DOI: <https://doi.org/10.17501/icpsd.2016.3103>

Abstract

Climate change has become a major issue of concern during recent years. It has affected the life, livelihood and economy of the tribal people and threatened their survival. There are about 700 different tribes in India as per the Article 342 of the Constitution of India. According to the census 2011, tribal population consisted 8.6 per cent in India. In Jharkhand tribal population represented 24.80 per cent as per census 2011. The huge emission of Green House Gases and decline in forest coverage has resulted into the climate change. The excess emission of the Green House Gases increases the earth's surface temperature and causes global warming. It has caused discomfort for the tribal people, increased their cost of living and threat for survival, decline in crop production, increase in the incidence of crop diseases, livestock, human beings, social stress and conflict on sharing resources. It is believed that present state of climate change is human induced. In recent years the evidence of climate change is visible in Jharkhand State also. The incidence of drought has increased in entire state. The tribals are mainly dependent on natural resources and rain-fed agriculture. Therefore, they have been adversely affected due to changes in the climatic condition. In this study and attempt is made to find out the changes in climatic condition, assess its negative effects on the tribal economy and livelihood insecurity, evaluate the existing coping mechanism and practices including indigenous methods adopted by the tribals for dealing with the adverse consequences of the changing climate and find out the deficiencies in their traditional coping mechanism and practices in contrast to contemporary scientific approaches and recommend policy to set action plans for the adaptation by tribals of Jharkhand for their sustainable development.

Keywords: *climate, tribal, Jharkhand, sustainable, development*

ARTICLES/ CHAPTERS PUBLISHED IN BOOKS

Title With Page Numbers	Book Title & Publisher	Issn/Isbn No.	International/ National/State Level	Whether You Are The First
“Quality education for Sustainable Development: A Case Study of Scheduled Tribe Students of Jharkhand” PP: 100-116	Education for Sustainable Development: Principles and Practices for Teachers N.B. Publications SF-1A-5/3D.L.F. Ankur Vihar Loni Ghaziabad - 201102, U.P. (India), Published in 2024	ISBN:978-93-91550-93-6	National Level	First Author: Dr. Marcus Barla Second author Anshu N. Kujur
New Education policy (NEP-2020): a threshold for sustainable development of tribals- page no-40-48	Reorientation of Higher Education as Envisioned in NEP 2020,; Published in May 2024, Publisher- Xavier Publication, Ranchi	ISBN- 978-93-85408-41-0	National Level	First author

PARTICIPATION AND PRESENTATION OF RESEARCH PAPERS IN CONFERENCES/ SEMINARS/WORKSHOPS

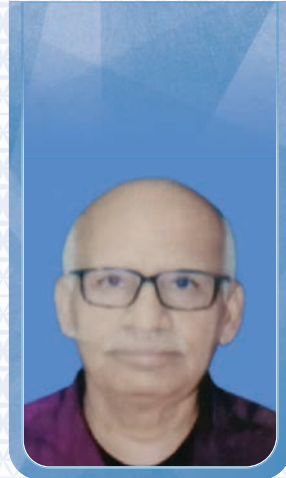
Sl No.	Title Oo Paper Presented	Title of Conference /Seminar Etc.	Organized By	State/ National/ International	Date of Presentation
1	The Tribal Philosophy of Sustainable Development: A Case Study with Reference to the Tribals of Chotanagpur	Advances in Novel materials, Towards sustainable Future	Department of Physics & IQAC, St. Xavier's College, Ranchi, Sponsored by Jharkhand Council on Science Technology & Innovation, Ranchi	International	20-22 January 2024

Sl No.	Title Oo Paper Presented	Title of Conference /Seminar Etc.	Organized By	State/ National/ International	Date of Presentation
2	Sustainable Agriculture: A Panacea for Livelihood Security and Decent Employment Opportunity for the Tribal Farmers: A Case Study of Eastern Region of India.”	Global Conclave 2024, Advancing human Development in the Global South: 11-13 January 2024, India International Centre, New Delhi	Institute of human Development (IHD), Delhi & Research and Information System for Developing Countries (RIS), Delhi, NITI Aayog	International	11-13 January 2024
	Integrated Farming: A Step Towards Sustainable Agriculture for the Tribal Farmers of Jharkhand	Department of Botany, St. Xavier’s College, Ranchi			
3	Participated: “National Seminar on Cultural History of Northeast, India	Government of Jharkhand, Dr. Ram Dayal Munda Tribal Welfare Research Institute, Ranchi, (Department of Scheduled Tribe, Scheduled Caste, Minority & Backward Class Welfare)	Ram Dayal Munda Tribal Welfare Research Institute, Ranchi	State Level;	19-22 March, 2024
4	Urgent Need of Sustainable and Quality Education for the Employability of Tribals: A Case Study of Jharkhand	The Indian Society of Labour Economics 65th Annual Conference	The Indian Society of Labour Economics 65th Annual Conference 9-11 January 2025 Institute For Social And Economic Change, Bengaluru	National Level	9-11 January 2025

Name of The Faculty- Dr. Vinoy Kumar Pandey

Department of Economics

Email- profvvpandeyranchi@gmail.com



Ph.D. Supervision

SL No.	Name of the Scholar	Topic	Date of Registration
1	Amit Kumar	Socio-economics status of Asur Tribe – A Case study of Gumla District of Jharkhand”	18.03.2023

Name of The Faculty - Dr. Dhiraj Mani Pathak, Assistant Professor

Department of Economics

Email- pathaksxc@gmail.com

Mobile-9386766011

ORCID ID: 0009-0007-7365-6675



- Total Number of Book Chapter Published- 03
- Number of New Ph.D. Candidate Registration- 05
- Paper Presentation in Seminars/Conferences-04

1. Book Chapter

Book Title: Old Age And Its Different Aspects (Edited By Dr. Nitu)

Chapter Title: Rising Elderly Population And The Growing Concerns About Their Old Age Financial Security In India **Publisher:** Disha International Publishing House, Greater Noida

ISBN: 978-81-974108-3-3

Short Description:

This chapter discusses the demographic shift of india towards an ageing society, highlighting the rapid rise in elderly population and the financial insecurities they face. Drawing from reports such as *elderly in India 2021* and surveys like the age well foundation's study, it emphasizes that financial dependency and insecurity are among the most pressing challenges for India's ageing population. the chapter critically evaluates existing support structures and underlines the urgent need for policy reforms to ensure financial security for the elderly.

2. Book Chapter

Book Title: Circular Economy: Driving Sustainable Development For Viksit Bharat @ 2047

Chapter Title: Circular Economy: An Economic Perspective (Pp. 37–47)

Publisher: Agra Book International, 105 Grand Fort, Paschimpuri Sikandra, Agra

ISBN: 978-93-94151-94-9

Short Description:

The Chapter Provides An Economic Perspective On The Principles Of Circular Economy And Its Relevance For Sustainable Development In India. It Explores The Role Of Resource Efficiency, Waste Reduction, And Economic Restructuring In Achieving The Vision Of Viksit Bharat @ 2047. The Discussion Highlights Policy Directions And Institutional Mechanisms Necessary For Transitioning Towards A Circular Economic Model.

3. Book Chapter

Book Title: Emerging Perspectives In Economics, Commerce And Management (Edited By Dr. Neelu Singh)

Chapter Title: Fiscal Trends In Jharkhand: An Analysis Of Public Revenue, Expenditure, And The Covid-19 Impacts (2004–2025)

Publisher: Disha International Publishing House; ISBN: 978-93-48084-57-6

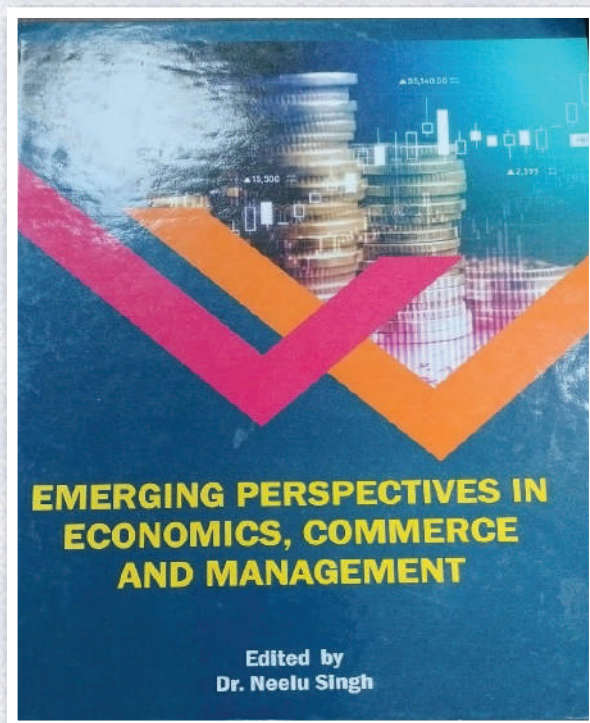
Short Description:

This chapter examines the fiscal landscape of Jharkhand by analyzing long-term trends in revenue generation and public expenditure from 2004 to 2025. Special attention is given to the disruptions caused by the covid-19 pandemic on the state's fiscal stability. the chapter provides insights into the challenges and opportunities in balancing public revenue with developmental expenditure for sustainable state growth.

Ph.D. Supervision:

List of Students-

Sl.No.	Students Name	Topic	Date of Registration
1.	Jimmy Gupta	The Study Of The Causes Of Disparity In The Socio-Economic Status Of Tribal Women In Jharkhand: With Special Reference To Gumla District	25/01/2023
2.	Zeba Ashraf	Status, Trends And Socio-Economic Factors Affecting Malnutrition In Jharkhand With Special Reference Children Aged Under Five Years (0-59 Months)	16/08/2023
3.	Ashish Ranjan	Impact Of Public Expenditure On Economic Growth Of Jharkhand	16/08/2023
4.	Vishal Kumar	Women Empowerment For Atmanirbhar: A Case Study Of Shgs In Rural Jharkhand With Special Reference To Girdih District	04/09/2023
5.	Neeraj Kumar	Status, Trends And Causes Of School Dropout In Jharkhand: A Macro And Micro Level Study	04/09/2023



I. CONFERENCES

1. “EU-India Bilateral Construction 2025: Time for a Rethink and Rejig in Troubled Waters” paper presented at the International Conference on “The EU, its Policies and its Relations in Times of Transitions” organised by the European Union Studies Association Asia Pacific (EUSAAP), the University of Macau (UM), the Institute of European Studies of Macau (IEEM) and European Studies Association Macau (EUSA-Macau), 8-9 June 2025.
2. “Resurrection, Reckoning and Rise of the EU: Some Take-aways from the Indian Experience” paper presented at the International Conference on “The European Union in an Illiberal World” organised by the Global Governance Research Europe, Universite Paris 1, Pantheon Sorbonne, 22 June 2025.

3. “Adivasi Society and their Deep-rooted Knowledge System” paper presented at the International Seminar on “Birsa Munda and Decolonizing Jajatiya Studies” organised by the Centre of Indian Languages, Jawaharlal Nehru University, New Delhi, 7-8 August 2025.
4. “Europe’s Strategic Dilemma in the Russia-Ukraine War: Evaluating Realist and Neo-liberal Responses” paper presented at the two-day International Conference on “Rethinking International Relations in an Evolving World Order: Emerging Trends and Challenges” organised by the Forum for Global Studies in collaboration with Southern Federal University, Russia, 11-12 August 2025.



Name of the Faculty - Dr. Rajeev Ranjan Shrivastava

Department of Geography

Email id: rajeevsxc2003@gmail.com

ORCID ID- <https://orcid.org/0009-0000-9598-5225>

Life Membership of Associations:

Life Membership of National Association of Geographers (NAGI) New Delhi- LM No 2034

Life membership of Association of Geographers Bihar and Jharkhand-LM No 257

Life Membership of Indian National Cartographers Association INCA Hyderabad LM No-3133

Life Membership of Goa Geographer.

- Total number of Research article during the period- 03
- Total number of Ph.D. Awarded- 03
- Total number of Ph.D. Registration- 03 Ongoing
- MEMBERSHIP: Professional / Learned bodies, Societies etc. - 04

Research article - 01

LULC Change detection through NDVI and correlation Between NDVI and Land Surface Temperature in Bokaro district, Jharkhand. The Geographical Observer

Vol 52,2022, ISSN Number: 0072-0925

Author's: Rani Utkarsha & Shrivastava Rajeev Ranjan

Abstract

After industrialization in India, Bokaro has emerged as a significant mining district of Jharkhand and India. These days, immediate, and long-term change detection using remote sensing (RS) data and geographical information system (GIS) is of supreme importance in generating information about the latest land use/land cover (LULC), land surface temperature (LST), and normalized difference vegetation index (NDVI) by spatial and temporal changes. In this study, the Land Surface Temperature (LST) and Land Use Land Cover of 1991, 2001, 2011, and 2021 were analysed using NDVI for the spatial distribution of temperature and land cover changes using Landsat images respectively. A total of four LULC classes are identified to harvest the statistics of Vegetation, Agriculture, Mining and settlement, and water bodies. A quantitative approach was used to explore the relationships among land surface temperature, land cover areas, and the Normalized Difference Vegetation Index (NDVI) and UHI was evaluated. Results showed that the vegetation cover has decreased rapidly over the 20 years from 1991 to 2011 but hugely improved in 2021 and this change has contributed to the variations in the micro-level climate change and, shows that the urban and mining areas correlated positively with high land surface temperatures while water body and vegetated areas correlated positively with low LST values.

Keywords: NDVI (normalized difference vegetation index), LST (land surface temperature)

Research article - 02

Satellite-based analysis of land use & land cover through several indices & K means unsupervised Classification in Bokaro district, Jharkhand.

International Journal of Novel Research & Development (IJNRD), Vol 5, Issue 5 May 2023, ISSN no 2456-4156

Author's: Rani Utkarsha & Shrivastava Rajeev Ranjan

Abstract

The earth has transformed ages throughout the world to the service of humankind. In India explosive growth of the population and their growing need has steadily increased the demand to utilize the land resources at optimum for agricultural land, mining and industrial establishment, urban expansion, etc. with the expense of natural forest, grassland, and wetland that had been the valuable habitat of numerous species. Therefore, Land use and land cover change have become significant issues to study resource management and utilization in the present scenario. This study aims to detect the land-use land cover change in Bokaro District of Jharkhand, Eastern India from 2001 to 2021 using Landsat-7 ETM+ and Landsat 8 OLI satellite images. The DOS method has been used for atmospheric correction, and the classification NDVI, SAVI, MNDWI, and NDBI indices were first calculated. Afterward, K means unsupervised classification has been used to generate land use and land cover maps through the SCP plugin in QGIS. For the accuracy of classified land use and land cover maps, a confusion matrix & kappa coefficient were used to derive overall accuracy and the results were above the minimum and acceptable threshold level. The massive changes in land use land covers are noticed in vegetation, agricultural land, mining, allied activities, and waterbodies. The result reveals both the increase and decrease of the different land use/ land cover classes from 2001 to 2021. An appreciable increase in vegetation cover and a marginal decrease in the mining area was noticed.

Keywords: Landsat 7 ETM+, Landsat 8 OLI, DOS atmospheric correction, K means algorithm, Unsupervised classification, Kappa Coefficient

Research article-03

The variation in mobility levels of motorized vehicles between the city center and villages in the Bokaro district of Jharkhand. Research Review Journal of Social Science, Vol 3, No 1, Jan- June 2023, ISSN No: 2583-2867 Author's :Rani Utkarsha & Shrivastava Rajeev Ranjan

Abstract

The emergence of urban mobility and transportation facilities in cities has raised concerns about the lack of similar advancements in rural areas, particularly in the Bokaro District of Jharkhand. It was assumed that innovation and improved mobility would eventually reach the villages, but this goal is still far from being realized. To gather data on the movement of vehicles from Bokaro Steel City to the villages, a field survey was conducted between March and June 2020. Enumerators were assigned to observe and count vehicles crossing pre-determined checkpoints. Additionally, data on maximum temperature, minimum temperature, humidity, and precipitation were collected from <https://www.timeanddate.com>. The statistical analysis was performed using the Stata-16 software environment for regression analysis. The results of the analysis revealed that the regression coefficient for vehicle crossings per day from Bokaro Steel City to the nearest town was 8.25090, but this value was reduced to 4.10464 for more distant villages. The p-value was found to be statistically significant, indicating a significant difference in vehicle mobility between towns and villages. Furthermore, the study applied a Poisson regression model to examine the significance of various factors and utilized measures of goodness-of-fit such as deviance and AIC. The findings suggested that maximum temperature and weather conditions had a greater impact on vehicle

mobility in towns than in villages. In addition to presenting a vision for future rural mobility, this article also highlights the need for key infrastructure, and institutional vis-à-vis financial changes to facilitate the implementation of new technologies in rural areas. Overall, the research sheds light on the disparities in mobility and transportation between urban and rural areas in the Bokaro District. It emphasizes the significance of addressing these disparities and implementing necessary changes to ensure equitable access to transportation and mobility advancements for all communities.

Keywords: *Differential mobility, trickle-down, motorized vehicles, Poisson regression, AIC.*

Ph.D. Supervision:

Sl No.	Name of Research Scholar	Date of Registration	Topic Of Ph.D.	Status
1.	Shephali Prakash	02.07.2022	Impact of Urbanisation on Traffic Congestion, Land Transaction and Urban Crime in Ranchi City.	Ongoing
2.	Suman Murari	16.09.2023	Impact of Coal Mining on the livelihood of the People of Ramgarh Coalfield Region, Jharkhand.	Ongoing
3.	Shikha Rani	07.01.2025	Gender Gap at Various Educational Level among the Tribes in Jharkhand:A Case Study of Ranchi Municipal Corporation Area.	Ongoing
4.	Rajeshree Das	–	Urbanization and its Temporal Pressure on Land Resources (A Case Study of Ranchi City)	Awarded 16.02.2023
5.	Lochana Koirala	–	Levels of Regional Development and Planning in South Chotanagpur Division	Awarded 27.05.2023
6.	Utkarsha Rani	–	Sustainable Urban Development in Bokaro District	Awarded 23.07.2025

Name of the Faculty - Dr. Shiv Kumar

Department of Geography

9835757677 (M) Email- shivkr77@gmail.com

Vidwan ID - 642967

ORCID ID - 0009-0005-2995-1031

Web of Science Researcher ID- ODK-5809-2025



- Total number of Research article during the period- 04 (01 UGC CARE List)
- Total number of Ph.D. Awarded- 01
- Total number of Ph.D. Registration- 05 Ongoing
- PAPERS PRESENTED in Seminars/ Conferences/ Workshops/ Symposium :02
- MEMBERSHIP: Professional / Learned bodies, Societies etc. – 04

MEMBERSHIP

- i) Life member National Association of Geographers, India (NAGI) [LM 1481]
- ii) Life member Association of Geographers, Bihar and Jharkhand (AGBJ) [LM 223]
- iii) Life member Indian Society of Remote Sensing (ISRS) [L 3720]
- iv) Life member Indian Red Cross Society (IRCS) Jharkhand State Branch [10565 of 2010-11]

Total number of Research article during the period- 04 (June 2022- August, 2025)

RESEARCH PUBLICATIONS: International / National (Journals)-

Research paper - 01

2024 a: Kujur Juhi Teresa and Kumar Shiv, "Sustainable Tourism in Latehar: Balancing Adventure, Culture and Heritage", International Research Journal on Advanced Engineering and Management (IRJAEM), Vol. 2, No. 12, Dec, 2024 [eISSN: 2584-2854], pp 3446-3450 (Published: 2024-12-05)

DOI: <https://doi.org/10.47392/IRJAEM.2024.0508>

Publication Link: <https://goldncloudpublications.com/index.php/irjaem/article/view/596>

DOI: <https://doi.org/10.47392/IRJAEM.2024.0508>

Publication Certificate: https://drive.google.com/drive/folders/1r0pRgWmbK3zn-l45ziMd7DRR_HO_2HUt?usp=drive_link

Abstract

Sustainable tourism simply means fulfilling the current needs without compromising the needs of the future. It is a broad concept encompassing the social, economic, environmental and cultural aspects. Jharkhand is one of the beautiful states with rich culture, heritage and alluring nature including rolling hills, exotic and ear soothing waterfalls, serene views etc, truly embodying the name 'Jharkhand' which means 'the land of forests' Latehar is one of such districts in Jharkhand which is emerging as a tourist destination. It offers a blend of rich culture, heritage and a thrilling adventure which are one of the most desirable aspects for the tourists. This district is home to fascinating historical sites and vibrant traditions ie, from witnessing and admiring the historical sites to enjoying and experiencing the lively local events, making this place more remarkable. But it doesn't end here, as per the India state of forest report 2021,

56% of the geographical area of Latehar is covered with forest hence, offering lush green forest, a great deal of adventure, and countless opportunities for outdoor activities. This unique blend makes Latehar an appealing destination. The place is in the early stage of tourism development, and it is still growing. Tourists are drawn here by the history, culture and the beauty, so by prioritizing sustainability, it will not only enhance the present experiences of tourists but also ensure tourism to thrive for long years hence, whether the tourism growth is in initial stage or in growing stage, sustainable tourism should not be ignored. This paper sheds light on the adventures, cultures, and heritage of Latehar. Adventures like outdoor camps, bird watching, trekking, closely observing the wildlife and so on. If we talk about the culture, it has distinctive culture, these cultures are mostly based on nature or agriculture like tusu parab, jawa, sarinil and so on, the distinctive cuisine also attracts the tourists like pitha, dhuska, handia, chilka roti, rugra etc, further moving towards heritage, Latehar had very interesting history which led to establishment of the old Palamu Fort, new Palamu Fort and Navagarh Fort. These are the gems of Latehar.

Research paper - 02

2023 a: Kumari Rachna and Kumar Shiv, "Interlinkages of infrastructure and Regional Development: A Geographical Study of Ramgarh District of Jharkhand", The Calcutta Journal of Global Affairs, Vol. 7, No.1: Jan, 2023, pp58-69 [ISSN 2582-2241] University Grants Commission Approved Journal (under UGC-CARE, Arts & Humanities Citation Index) A Peer-Reviewed, Multi-Disciplinary Journal of Research Centre for Eastern and North Eastern Regional Studies, Kolkata (CENERS-K)

Abstract

Imbalances in the availability of infrastructure have been a major reason behind the skewed development. The aim of this research paper is to examine the preciseness of this assertion in the light of observed results at the study area using a multidimensional stratagem with sectoral sub-sectoral and composite indices of development and infrastructural availability. The infrastructure is important for faster economic growth and alleviation of poverty in the country. Adequate infrastructure in the form of road and railway transport systems, ports, power, airports and their efficient working is also needed for the integration of the Indian economy with other economies of the world. This paper highlights the intra-district disparities in infrastructural facilities in Ramgarh district using seven indicators viz. education, health, financial services, transport and communication and public utilities. This study is based on the secondary data collected by various governmental sites, various research papers, newspaper articles etc. and analysing data by various statistical tools, bar and pie diagrams. The findings are statistically very important to make new regional policies under the overall framework development in order to attain a balanced regional in both the infrastructure and regional development. Keywords: Economic, imbalances, infrastructure, integration, poverty

Research Paper - 03

2022 a: Kujur Juhi Teresa and Kumar Shiv, "Tourism and Infrastructure Development in the District of Latehar, Jharkhand", The Geographical Outlook, Vol. XXXI, Jan- Dec, 2022, pp46-52 [ISSN 0433-4515] Biannual Bilingual Peer Reviewed/Referred Journal of University Department of Geography, Ranchi University.

Abstract

A place without infrastructure facilities cannot be developed as a tourist destination, although it has natural wealth, alluring waterfalls, hills, scenic beauty it cannot be survived as a tourist destination unless and until a proper infrastructure is built. Infrastructure simply means basic facilities and services for a region or community. Infrastructure forms a basic backbone for development of any sector, one of which is the tourism sector.

Infrastructure includes transportation system, accommodations, utilities like water and power supply, communication etc. infrastructure availability ensures convenience, comfort, and accessibility making tourists footfall to increase. Infrastructural development is an economic driver, but for a holistic development infrastructure goes beyond merely providing facilities, it also considers providing employment opportunities to the locals.

This paper emphasizes on the existing infrastructure and highlights on the need of further development to enhance the tourism potential of Latehar. It also highlights the upliftment of locals through various opportunities.

Keywords: *Infrastructure, Ammenities, Opportunities, Locals, Tourism*

Research paper - 04

2022 b: Kumar Shiv, “A Study of Sacred Groves of Gumla District (Jharkhand)”, Research Journal of Arts, Management and Social Sciences; Sept, 2022, Vol. XXIII:101-110 [ISSN 0975-4083] (UGC Approved Journal No (Old): 2138)

Abstract

Sacred groves are patches of primeval forest that some tribal/rural communities protect as abodes of deities and are the good source of a variety of medicinal plants, fruits, fodder, fuel wood, spices, etc. The present paper is a case study of some sacred groves of Gumla (Jharkhand) in some selected blocks and the aim of the study is to document the tradition of sacred groves (Sarna Sthals). An attempt has been made to bring out historical, cultural and ecological importance of Sarna Sthals. Some suggestive measures have also been enumerated for the conservation of Sarna Sthals.

Keywords- *Sarna Sthal, Sal/Sakhua, Socio-Cultural, Pahan, Tribal*

Ph.D. Supervision:

Sl No.	Name of Research Scholar	Date of Registration	Topic Of Ph.D.	Status
1.	Madumita Minz	26.02.2014	Functions of Urban Fringe of Ranchi City	Awarded 05/12/2022
2.	Neha Kumari	16.09.2023	“खूँटी जिला में जनजातीय महिलाओं की सामाजिक, सांस्कृतिक तथा आर्थिक स्थिति का तुलनात्मक अध्ययन”	Ongoing
3.	Sonalika Satpathy	09.07.2021	Rural-Urban Migration of Bero Block of Ranchi District	Ongoing
4.	Rachna Kumari,	09.07.2021	Urbanization and its Temporal Pressure on Land Resources (A Case Study of Ranchi City)	Ongoing
5.	Juhi Teresa Kujur,	22.09.2023	Problems and Prospects of Tourism Development in Latehar District	Ongoing
6.	Amit Kumar Hansdak,	22.09.2023	Problems and Prospects of Sericulture in Dumka District of Jharkhand	Ongoing
7.	Priyanka Mandal	11.10.2023	पूर्वी सिंहभूम जिला में जनजातीय महिलाओं के सामाजिक एवं आर्थिक स्थिति: एक भौगोलिक अध्ययन	Ongoing

A. PAPERS PRESENTED in Seminars/ Conferences/ Workshops/ Symposium :

➤ INTERNATIONAL

- i) 2022 a: Presented a paper on “Climate Change and Sustainable Agriculture in Jharkhand” in International Conference on Environment, Forestry and Sustainable Agriculture jointly organized by Dept. of Botany St. Xavier’s College, Ranchi and International Academy of Science and Research (IASR). Kolkata in association with International Consortium of Contemporary Biologist (ICCB), Ranchi in collaboration with Confederation of Indian Universities (CIU), New Delhi 14th -16th November, 2022.
- ii) 2022 b: Presented a paper on “Role of Agriculture in the Regional Development of Ramgarh District” (Co-author Rachna Kumari) in International Conference on Environment, Forestry and Sustainable Agriculture jointly organized by Dept. of Botany St. Xavier’s College, Ranchi and International Academy of Science and Research (IASR). Kolkata in association with International Consortium of Contemporary Biologist (ICCB), Ranchi in collaboration with Confederation of Indian Universities (CIU), New Delhi 14th -16th November, 2022.

Name of the Faculty/Researcher- Dr. Sandeep Chandra

Department of Geography

Email- sandeep.eyes@gmail.com

Web of Science ID- IAQ-0965-2023

ORCID ID- 0009-0002-1602-5096

- Total Number of Research paper published- 2
- Number of New Ph.D. Candidate registration- 5
- Number of Ph.D. Submission-01
- Total Number of Research Papers Presented in Seminar/Conference- 3
- Life member of Professional Associations-
- Indian society of Remote Sensing, IIRS, Dehradun- L4342
- National Association of Geographers, India (NAGI), New Delhi, LM No- 2017
- Indian National Cartographic Association (INCA), Hyderabad, LM no- 3135
- Association of Geographers of Bihar and Jharkhand (AGBJ)- LM 1334
- Foundation of Practicing Geographers, Kolkata- LM 268



Research article - 01

Chandra, S. & Verma S (2023). Spatio-Temporal Pattern of Scheduled Tribe Population Concentration in North Chotanagpur Division, Jharkhand, The Geographical Observer, Vol. 52, page- 65-82, 2022 ISSN- 0072-0925, US Library Congress Control No. Sa68004330

Spatio-Temporal Pattern of Scheduled Tribe Population Concentration in North Chotanagpur Division, Jharkhand

Sandeep Chandra^{1*}, Sonam Verma²

1. Assistant Professor, Department of Geography, St. Xavier's College, Ranchi
2. Assistant Professor, Department of Geography, A.B.M. College, Jamshedpur

Abstract

According to 2011 census Jharkhand has around 8.3 % of total scheduled tribal population of India. Within Jharkhand nearly total ST population share in total population of the state is about 26 %. There is considerable spatial variation of ST population concentration within the state. Over the period of time population and its composition for many areas have changed. There is general sentiment among the local communities of the region that people have migrated to other areas for different economic activities such as mining, industrial activities etc, which may have changed demographic composition greatly.

The paper attempts to examine changes in demographic composition of North Chotanagpur division, taking blocks as spatial units for data analysis. North Chotanagpur Division is one among the total five administrative divisions of Jharkhand, here mica and coal deposits are very significant. The northern part of study area is rich in mica mineral which is mainly concentrated in Koderma district and areas around it. Legal and commercial mining of mica become less important after the implementation of 1980s forest laws. The southern part of North Chotanagpur division is important for Damodar river basin and coal deposits. Here districts like Ramgarh, Bokaro, and Dhanbad has remained significant for coal mining in the state.

Authors have tried to show the distribution of population composition and its changes for the study area using choropleth maps, tables, and charts. Present work finds that there has been changes in demographic composition of blocks of the region but not very substantial. Comparing the population composition between census year 1991, 2001 and 2011 we find that in many areas ST population concentration has increased while in some of the areas it has decreased, the changes are mostly between 0.5 to 3 %.

Keywords- *Jharkhand, North Chotanagpur Division, Population composition, ST population concentration*

Research article - 02

Mondal, A., & Chandra, S. (2022). NDWI based assessment of surface water area and its correlation with annual rainfall patterns in East Singhbhum District, Jharkhand. *Geographical Outlook*, 31, 34-45.

NDWI based assessment of surface water area and its correlation with annual Rainfall Patterns in East Singhbhum District, Jharkhand

Aritra Mondal¹ Sandeep Chandra^{2*}

1- Research Scholar, University Department of Geography, Ranchi University, Ranchi

2*- Assistant Professor, Department of Geography, St. Xavier's College, Ranchi

Abstract

This study aims to dive into the changes in the water landscape within East Singhbhum District from 1990 to 2020. Using advanced remote sensing and GIS techniques, our investigation aims to measure alterations in water bodies and map these changes and find its connections with historical rainfall pattern. Additionally, we seek to identify potential causes for change, detect emerging trends or anomalies, and provide insights into the probable influence of anthropogenic factors on surface water area. The methodology includes data acquisition, NDWI-based water body identification, map making, quantitative measurement of water area, correlation with historical rainfall data, and an exploration of trends and anomalies.

Keyword- *NDWI, Remote Sensing and GIS, surface water area, annual rainfall pattern, East Singhbhum*

Ph.D. Supervision

Sl No	Name of Research Scholar	Date of Registration	Topic of Ph.D.	Status
1	Sonam Verma	26.05.2019	Exploitation of Natural Resources (Forest & Mineral Resource) and its impact on Tribal life of North Chotanagpur Division of Jharkhand (1992-2017)	Submitted
2	Barkha Bodra, NET	20.01.2023	दलमा वन्यजीव अभ्यारण्य पर पारिस्थितिकी- पर्यटन का प्रभाव : एक भौगोलिक अध्ययन	Ongoing
3	Akanksha, NET	20.01.2023	Coalfire Induced Displacement And Rehabilitation In Jharia Coalfield: A Study In Social Geography	Ongoing
4	Aritra Mondal, JRF	08.09.2023	Role Of Aquaculture In Socio-Economic Development Of East Singhbhum	Ongoing
5	Kumari Priya, NET	12.09.2023	Transport Network Analysis and Regional Development of Hazaribag District, Jharkhand	Ongoing
6	Md Sayeed Anwar, JRF	06.02.2025	Challenges of Groundwater and its outcome on human society in Ramgarh District, Jharkhand	Ongoing

Conference/Seminar - 3

- Participated and Presented a paper entitled " Need for Collaborative research in monitoring and mitigating environmental degradation and Climate change" in the Two-day National conference and Symposium on Climate Change: Challenges and opportunities. It was organized by IQAC and University Department of Zoology, Ranchi University, Ranchi, 25-26 May, 2023
- Presented Co-Authored paper titled "Freshwater pearl culture: A blooming sector in aquaculture practices in India" in the International Conference on Environment, Aquaculture and Sustainable Agriculture held at St. Xavier's College, Ranchi on 22,23,24th September, 2023
- Presented paper titled "temporal pattern and trend of rainfall and temperature of Ranchi between the year 1980-85 and 2015-20" in the Two-day XXIVth annual conference and national seminar on Climatic Vulnerability: Challenges to physical landscape and human response; Organized by University Department of Geography, Ranchi university, Ranchi on 4th and 5th November 2023.

Name of the Faculty- Fr. Dr. Ephrem Gerald Baa

Assistant Professor

Department of History



Ph.D Supervision

Sl. No.	Name Research Scholar	Date of Registration	Topic of Ph.D.
1.	Moin Ahmed	5 oct 2024	Mosaic of Harmony: India's composite culture from medieval roots to modern reality

Name of the Faculty/ Researcher- Dr. Sanjay Kumar Sinha

Head, Department. of History

Email id: hisansxc@gmail.com



No. of Research Paper - 04

1. Research Article published in “Scholarly Research Journal For Interdisciplinary Studies”

June 2022, Vol-10, Issue-54, Impact Factor-7,380 ISSN-23194766

An international Peer Reviewed Journal

Topic- Budho Bhagat; Hero of The Kol Revolt of 1831-32

Abstract

The research article provides an in-depth study of the life and contributions of Budho Bhagat, a prominent tribal leader and a central figure in the Kol Rebellion of 1831-32. It was a significant uprising against British Colonial rule and the oppressive policies that dispossessed the tribals of Chotanagpur.

The article highlights Budho Bhagat's role as a leader who mobilized the tribals of the region including Ho, Munda, and Oraons, against the British East India Company and their allies. The rebellion was fuelled by grievances over land alienation, unfair taxes, and the intrusion of non-tribal landlords and moneylenders (Dikus), into the traditional tribal territories. Budho's charismatic leadership and strategic prowess were instrumental in uniting diverse groups under a common cause, transforming localized discontent into a widespread insurgency.

The article examines the nature of the revolt and the methods used by the rebels including guerilla warfare and coordinated attacks on British installations and the home of Dikus. It also discusses the brutal suppression of the rebellion and the tragic demise of Budho Bhagat and his followers. The article delves that the revolt was ultimately suppressed but it paved the way for the enactment of the famous Wilkinson code in the administration of the area, which recognized the traditional rights of the tribal chiefs known as the Mankis and mundas.

Keywords- *Diku, Manki, Munda, Wilkinson Code*

2. Research article published in “Journal of Research And Development”

(International level referred and Peer Reviewed Journal)

April-2024 Volume-16 Issue-06 Impact Factor-7.265 ISSN-2230-9578

Topic- Kherwar Saints; The Freedom Fighter of Santhal Tribes

Abstract

This is a very significant fact that the mutiny of 1857 in Jharkhand began in the Rohini village of Santhal Pargana, but this revolt like in other parts of Jharkhand never spread among the civilians and specially among the local tribals in Santhal Pargana. It so happened because the British Government adopted several reform measures in the administration of the Santhal Pargana after the Hul of 1855, which satisfied

the Santal people. By the Act 37th of 22nd December 1855, a new territory was formed in and around Damin-i-Koh into a separate non-regulation district called as Santal Pargana which was divided into four subdistricts-Dumka, Deoghar, Godda, And Rajmahal. They were placed under a Deputy Commissioner and four Assistant Commissioners with both civil and criminal jurisdiction over the area. This was followed by the introduction of the Police Rules of 1856 which recognized tribal headmen system (Manjhi Parganait). and gave Police powers to village officials which is known as Yule's Rule. The system worked well but situation began to change after the departure of Commissioner Yule. The administration relapsed with misgovernance the moneylenders, outsider exploiters and Government Amlahs once again entered into the scene. The article highlights that to meet the challenge Kherwar Saints Bhagirath Manjhi and Dubia Gosain took the lead, they advocated religious reforms as a possible escape from the sufferings. The article further discusses that the Kherwar movement was firstly religious in nature yet it had elements of social, economic, agrarian and political nature as it sought for the establishment of Santal Raj.

Keywords - Damin-i-Koh, Manjhi, Parganait, Amlahs

3. Research article published in “International Journal Of Advance and Applied research”

A Multidisciplinary Peer Reviewed International Journal

Volume -5 Issue-19 June-2024 Impact Factor 7.328 ISSN 2347-7075

Topic : The Migration of The Kharia Tribe Into Chotanagpur: Unravelling the Historical Facets

Abstract

The people of Kharia tribe living in India from ancient time. They have their own separate history in every aspect of life. People of Kharia tribe settled in different parts of the country such as in Maharashtra, Assam, Tripura, Andaman and Delhi, but at present the Kharias are most numerous in the state of Jharkhand than in other parts of India. Most of the historians have opinion that originating from South India they migrated and established settlements across different regions of the country.

The different scholars have different opinions regarding the migration of the Kharia tribe in India. As early as in 1872, Dalton in his work entitled *Ethnology of Bengal* described that Kharias were originally inhabitant of south India and they migrated to Chotanagpur. The famous scholar S.C Roy has written that Hill Kharias were living at Mayurbhanj, while other two sections namely Delki Kharia and Dudh Kharia possess traditions somewhat more definite though rather of a general nature regarding their past wanderings in country that hints us about their migration route.

Keywords- Delki Kharia Hill Kharia Dudh Kharia

4. Article published in the Edited book title ‘ Birsa Munda ’ (“Janjatiya Gaurav”)

Editor Dr. Alok K Chakravali, Vice Chancellor, Guru Ghasidas University, Bilaspur, Chattisgarh

ISBN 978-93-90702-70-1 edition 2022

Topic Birsa : Making of The Dharti Aba

Abstract

The research article explores the life and legacy of Birsa Munda, a seminal figure in Indian history and a revered leader of the Munda tribe. The study traces his transformation from a young tribal boy into Dharti Aba (Father of The Earth), a messianic leader who spearheaded The Ulgulan or Great Rebellion against British colonial rule and exploitive forces of local landlords and moneylenders.

The article highlights Birsa's unique approach which combined spiritual revivalism with political activism. It mentions how he founded Birsait faith that sought to cleanse Munda society of superstitions while instilling a renewed sense of cultural pride and dignity. This spiritual awakening served as the foundation for his broader political movement, mobilising a unified resistance against the alienation of tribal land, unjust taxation and forced labour. The article delves into the impact of colonial forest policies and the feudal system that dispossessed the tribal communities of their ancestral lands and resources. Although the revolt was ultimately suppressed by the British, but his struggle left a lasting legacy. This Movement led to the enactment of the CNT Act of 1908, a landmark legislation that provided protection for the tribal land rights. The article asserts that Birsa's significance extends beyond his role as a freedom fighter. He is remembered as a visionary who successfully merged religious reform with a political fight for justice, inspiring generations of Indigenous people to reclaim their rights and assert their identity.

Keywords - *Ulgulan, Birsait, Mahajan, Dharti Aba*

- Paper presented at the International Seminar organized by the Department of Botany, St. Xavier's College, Ranchi, in collaboration with the International Research Foundation, Kolkata, held on April 12-14, 2025, on the theme "Ecology and Climate." Topic: "The Genesis of Environmental Science in the Vedas: A Historical Study."

Ph.D Supervision

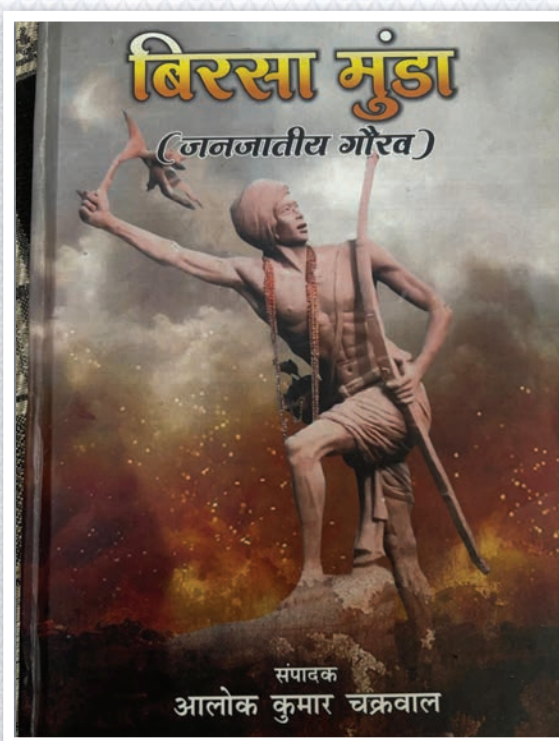
Sl. No.	Name Research Scholar	Date of Registration	Topic of Ph.D.
1.	Jagdeep Kumar Hembrom	23 August, 2023	Britishkalin Jharkhand me Gair Viniyaman Kshetra Ek Aithasik Adhyayan (1780- 1947)

Book Chapter-

Book title- Birsa Munda (Janjatiya Gaurav), August 2022

Chapter Title- Birsa: Making of the Dharti Aba

अनुक्रमणिका		
संदेश	सुश्री अनुसुईया उइके (माननीय राज्यपाल, छ.ग.)	(iii)
संदेश	भर्मिन्द्र प्रधान (माननीय मंत्री, भारत सरकार)	(v)
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2.	Bhagwan Birsa Munda: A Tribal Hero of Indian Adivasis Kunal Kashyap, Priyanka, Subal Das	10
3.	The Ulgulan for Jal, Jangal and Jamin Vipin Tirkey	14
4.	Birsa Munda and his Political Vision Sudarshan Singh	18
5.	The Legend of The Ulgulan Payal Singh	24
6.	Fir Se Kareu Ulgulan Re: An Analysis of Nagpuri Song Dedicated to Bhagwan Birsa Munda Sirista Julita Meenz, Balram Oraon	33
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9.	आदिवासियों के भगवान बिरसा मुंडा : एक अध्ययन शशिकांत पाण्डेय	52
10.	समकालीन संदर्भ में बिरसा मुंडा के चिन्तन की उपादेयता प्रमोद कुमार, संजय यादव	61



Name of the Faculty/Researcher-**Anju Oseema Maria Toppo**

Department of History

Email id- anjuseema@gmail.com

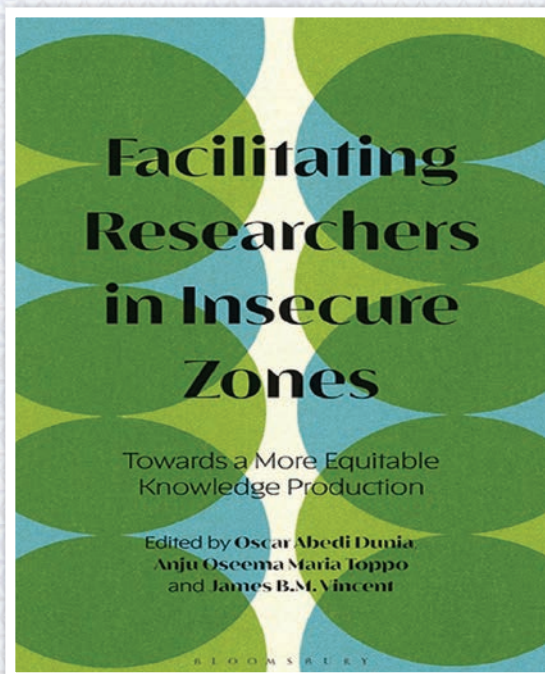
ORCID ID- 0009-0001-3577-6234



BOOK PUBLISHED: 01

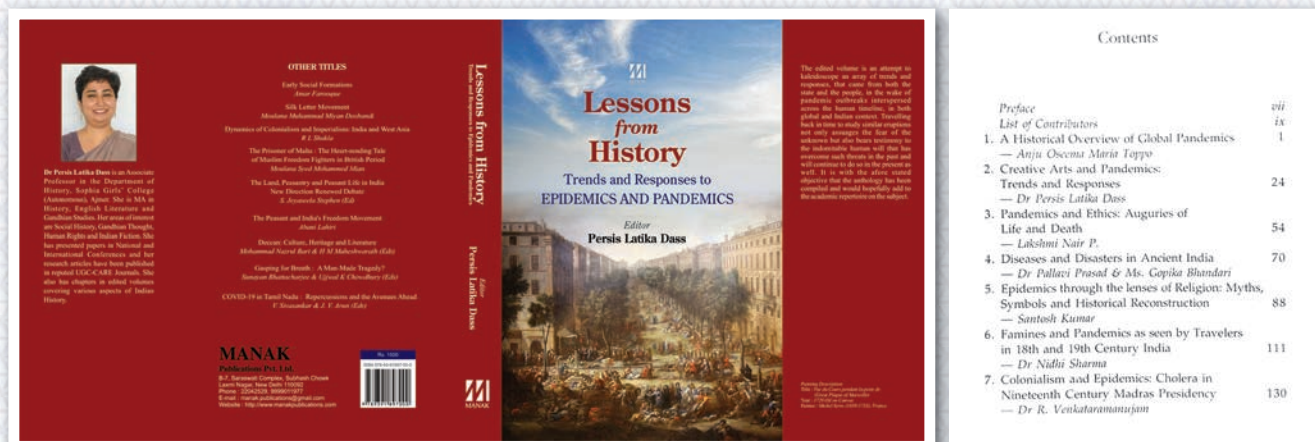
Abedi Dunia, O., Toppo, A. O. M., & Vincent, J. B. M. (Eds.). (2023). *Facilitating Researchers in Insecure Zones: Towards a more equitable knowledge production*. London: Bloomsbury Academic.

Description : This volume brings together accounts from facilitating or 'brokering' researchers in three settings afflicted by armed conflict, including DR Congo, Sierra Leone and Jharkhand, India. Indispensable to the research practice carried out by so-called 'contracting researchers', who are often based in the Global North, it is these facilitating researchers who truly regulate the access and flow of knowledge, and yet are often referred to merely as 'fixers', with their contributions systematically erased in the final research texts. This book recounts first-hand the varied and crucial roles played by such researchers, meanwhile bearing witness to the insecurities and scarce resources navigated by them in order to facilitate the research of others. By listening to and learning from their experiences, the book outlines different routes towards a more equitable fieldwork, and a more collaborative process of knowledge production.



CHAPTER IN BOOK : 01

Anju O. M. Toppo, "A Historical Overview of Global Pandemics," in *Lessons from History: Trends and Responses to Epidemics and Pandemics* (Delhi: Manak Publications), pp. 1-23.



Description- A year has passed witnessing the wrath of Coronavirus (Covid 19) forcing us to enter into a transitional phase, where every unprecedented change in the lifestyle has been termed as the ‘new normal’. On the one hand, growing uncertainties have encouraged acceptance and adaptation to new mode, but on the other have also exposed infrastructural failures. The countries of global north and south have experienced related but different extreme situations of numerous deaths, poverty, starvation, problem of migrant workers etc. This paper tends to trace the deadly situations caused by the pandemic globally throughout the recorded history. Majority of the people are aware of bubonic plague Black death of 1350 but are unaware of other deadliest Pandemics which happened years back and shook human civilization. I seek to provide historical overview of the epidemics and pandemic globally for better understanding of the gap exposed by Covid 19. This indeed would be channelized as an opportunity to do away with the shortcomings of the past and equip oneself to face challenges. This paper intends to provide deeper insights on the occurrence of pandemics globally and then drawing a correlation between the social changes, resultant inequality, economic devastation and changes ahead and state’s efficiency in containing the disease.

Keywords :- *Epidemics, Pandemic, Coronavirus, infrastructural failures, migrant, inequality.*

Total Number of Research Article Published During The Period- 02 (UGC CARE List- 2)

1. International Feminist Journal of Politics Volume 26, 2024 - Issue 5: Remapping the Feminist Global

Title- Locating Indian Adivasi women’s struggles in relation to global Indigenous feminisms.

Abstract

India’s Indigenous population, popularly referred to as Adivasi, has always had women as a cornerstone of economy and culture. However, is there a difference between being an Adivasi and being an Adivasi woman? How and why does feminism exist in a society that has been time and again romanticized as the most egalitarian and progressive in the world? The intersectionality of gender and Indigenous identity brings forth the double marginalization of Adivasi women, impacting various aspects of their lives including social, economic, cultural, and political dimensions. While gender-based discrimination among Adivasis has received some scholarly attention recently, our article aims to study how Adivasi women have challenged and resisted such discrimination. In this article, we explore the relevance of feminism to Adivasi culture, tracing its roots within the many forms of subtle resistance against gender-based discrimination.

Keywords: *Adivasi, intersectionality, egalitarian, feminism I*

2. International Journal of Social Research Methodology Volume 26, 2023 - Issue 5: Changing Research Practices – Methodological Responses to the Covid-19 Pandemic and Uncertain Futures.

Title- Visibilising hidden realities and uncertainties: the ‘post-covid’ move towards decolonized and ethical field research practices

Abstract

This article seeks to move beyond the Euro/North-centrism recurrent in methodological discussions on what we may learn from the COVID-19 pandemic. Such debates often centre on uncertainty and involuntary immobility – aspects which are hardly new for many researchers. In this article, we argue that the pandemic offers an opportunity to rethink research relations between what we term ‘contracting researchers’ in the Global North and ‘facilitating researchers’ in the Global South. Such relations are often marked by rampant inequalities in remuneration, working conditions, and visibility/authorship. Drawing upon experiences

in DR Congo, Sierra Leone, and India, we argue that the pandemic increased the dependence on – and highlighted the invaluable contributions and skills of –researchers, in part slightly refiguring bargaining power. We also propose pathways for change, arguing for a strong collaborative approach and the need for institutional change, without discarding the responsibilities of individual researchers.

Keywords: COVID-19, methodology, uncertainty, contracting researchers, facilitating researchers, remote research practices, field research, research ethics, decolonizing research, climate change action

Book Review -01

Journal of the Indian Society for Ecological Economics- INSEE

Toppo, A. O. (2024). Reordering Nature: An Assessment of Colonial and Post-Colonial Forest Policy in Jalpaiguri and the Jungle Mahals. *Ecology, Economy and Society–the INSEE Journal*, 7(2), 135–137. <https://doi.org/10.37773/ees.v7i2.1319>

Seminar/Conference attended/Paper Presented (National/International): 06

- 1) Presented a co-authored paper titled “The non-Adivasiness of writings on Adivasis: Reflections from Jharkhand” at the Centre for World Environmental History (CWEH) , University of Sussex. Date: 28 and 29 May 2025
- 2) Presented a paper on “Gender and Indigeneity” at IAWS Mid-Eastern Regional Conference, Gender and Marginalisation in Mid- Eastern India: Experiences from Jharkhand, Chhattisgarh and Bihar. Jointly Organised by Indian Association for Women’s Studies, Dr. Shyama Prasad Mukherjee University, Ranchi and Guru Nanak College, Dhanbad
- 3) Presented a paper titled ‘Systematically Silenced and Non-Recognized’ at Nordev International Conference, Uppsala University, Sweden. (August, 2023)
- 4) Presented a paper titled ‘The Changing Construct of Adivasi Identity in Indian Context’, at the conference Science, Humainism and the Making of Modern India at Indian Museum Kolkata on 9-10 January 2023 organized by Centre for World Environment History, University of Sussex.
- 5) presented a paper titled ‘Indigenous (Adivasi) Identity Assertion through ages’ on the occasion of “Jharkhand Janjatiya Mahotsav, 2022”, Dr. Ramdayal Munda Tribal Welfare Research Institute, Ranchi (9th- 10th August, 2022)
- 6) Presented a paper titled “Encountering Social Ecology in Adivasi Worldview” Held on 14-16 Nov 2022, in International Conference on Environment, Forestry and Sustainable Agriculture organized by Department of Botany, St Xavier’s College, Ranchi and International Academy of Science and Research Kolkata. Research Magazine, St. Xavier’s College (Autonomous) Ranchi

Name of the Faculty/Researcher- Dr.Saumya Maniny Sinha

Department of Political Science

Email-saumyaanant@rediffmail.com

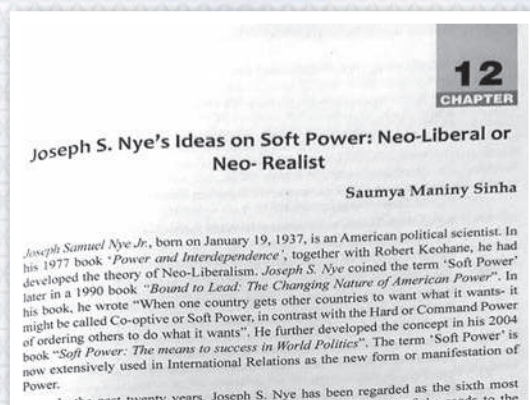


PUBLICATIONS:

- 1.' Imagining the World Order after COVID-19' published in World Focus, July,2020, ISSN 2230-8458
2. 'कोविड- 19 के बाद विश्व व्यवस्था की कल्पना' published in World Focus, Sept.2020, ISSN 2231-0185
- 3.' Acting Locally and thinking Globally -Agricultural sector reforms and the Modi Govt. ' published in India Foundation Journal, May-June,2021, Vol.II,Issue No.3, ISSN 2347-1522
4. 'Afghanistan in the vortex of Internal Power Politics' in Third Concept, Dec,2021, Vol.35, No.418, UGC Care Journal, ISSN 0970-7247
5. 'Subash Chandra Bose and the Andaman and Nicobar Islands' in Third Concept, Dec,2022, No.430, UGC Care Journal, ISSN 0970-7247
6. 'Russia-Ukraine crisis and Global power shifts' in World Focus, June,2023, Vol.44, No.522, ISSN 2231-0185
7. 'Democracy Deficit in the Neighborhood' in World Focus, Sept. 2023, ISSN 2230-8458
8. 'पड़ोस में लोकतंत्र की कमी' in World Focus, Sept.2023, ISSN 2231-0185, Issue 138...
9. 'Mahabharat as an instrument of India's Soft Power in South-East Asia' in World Focus, Oct.2023,ISSN 2230-8458
10. 'महाभारत, दक्षिण-पूर्व एशिया में भारत की सॉफ्ट पावर का एक साधन' in World Focus, Oct.2023, ISSN 2231-0185, Issue No. 138
11. 'Chatra ke prati badhati apradhik ghatnae, Samaj aur Prashasan par sawaliya nishaan' in Santhal Hul Express on 19 Dec, 2024

Book Authored/Edited/Chapter(s) in Book:

1. Chapter on "Joseph S.Nye's ideas on Soft Power : Neo-Liberal or Neo-Realism" in a book 'Soft Power and Public Diplomacy in India and China' edited by Bibhuti Bhushan Biswas (2020),Indu Book Services Publications, Ch12,p149-158, ISBN 978-93-86754-61-5
2. Chapter on "Sustainable Tourism practices and Environmental Conservation " in a book titled 'Echoes of the Land : Indigenous Knowledge and Sustainable Tourism' edited by Dr.Sujith A.S (2025), Wish Tree Publishing, Ch24,pg 196-200, ISBN-978-93-49311-52-7



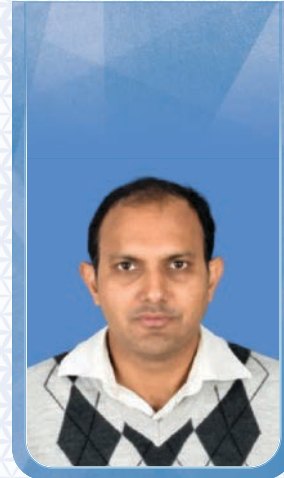
Name of the Faculty/Researcher- Dr. Ashutosh Kumar Pandey

Department of Political Science

Web of Science ID- LWJ-6370-2024

ORCID ID- 0009-0005-6472-4512

Vidwan-ID: 644740



Life member Professional Associations -

- Life Member of Indian Political Science Association. [Membership No. 4169]
- Life Member of Economic Association of Jharkhand.

- Total Number of Research papers published - 07
- Number of New Ph.D. Candidate registration - 06
- Number of Ph.D. Awarded - 01
- Number of Ph.D. Submitted - 01
- Total Number of Research Papers Presented in Seminar/Conference- 09

Paper Published

Research Paper - 01

“Exploring the Differences between Third-Wave Feminism and Second-Wave Feminism”, Indian Journal of Society and Politics [International, Peer Reviewed, Multidisciplinary, Bi annual, Bilingual, Journal of Arts and Social Science], Vol 11 (01) : 2024 Issn : 2348-0084 (Print) Issn: 2455-2127 (Online) (July-December 2023).

[https://www.ijsp.in/admin/mvc/upload/IJSP%2011\(01\)%202024_07.pdf](https://www.ijsp.in/admin/mvc/upload/IJSP%2011(01)%202024_07.pdf)

Dr. Ashutosh Kumar Pandey, Popelka Mitra

Abstract

The two waves of feminism emerged in different historical contexts and have distinct goals, strategies, and areas of focus. While second-wave feminism concentrated on issues such as reproductive rights and workplace discrimination, third-wave feminism emerged in response to perceived limitations and aimed to be more inclusive and intersectional. Third-wave feminism emphasizes diversity, inclusivity, and the intersectionality of women's experiences, acknowledging the importance of race, class, sexual orientation, and disability. It celebrates women's sexuality, advocates for body positivity, and actively engages with technology and media platforms. Moreover, third-wave feminism takes a global perspective, recognizing that women's issues transcend national boundaries. The paper attempts to examine how third-wave feminism celebrates sexuality and body positivity, actively engages with technology and media, and adopts a global perspective on women's issues. While recognizing the evolving nature of feminism, this abstract presents a broad overview of the distinctions between these two waves, acknowledging their contributions to the feminist movement.

Keywords: *Third-Wave Feminism, Second-Wave Feminism, Historical Context, Goals, Strategies,*

Research Paper - 02

“Jharkhand me 10vi Anuchuchi Ke Antargat Dal Badal Ki Rajniti : Samasya Evam Nidan” Journal for Social Development, Peer reviewed journal for social and behavioural sciences, Vol. 16 Jul-Sept 2024 ISSN: 0975-0142.

स्नेहिल आनन्द , डॉ. आशुतोष कुमार पांडेय

भारत के विशाल आकार, भाषा एवं सांस्कृतिक विविधता तथा विविध अवस्थिति को ध्यान में रखते हुए भारत में बहुदलीय व्यवस्था की गई ताकि यथासंभव सभी को लोकतंत्र तथा शासन प्रक्रिया में प्रतिनिधित्व का अवसर प्राप्त हो सके। कालांतर में विविध कारणों से दल-बदल के दृष्टांत सामने आने लगे, केवल 1967 से 1971 तक में 142 सांसदों और लगभग 1900 विधायकों के ऐसे मामले सामने आए जिनसे सरकारों के अस्थायित्व तथा अवसरवादिता को बढ़ावा मिलने लगा। चूंकि मूल संविधान में दल-बदल से रोक संबंधी कोई प्रावधान नहीं था, अतः 1985 में 52वें संविधान संशोधन द्वारा संविधान में दसवी अनुसूची को शामिल किया गया जिसे सामान्य बोलचाल की भाषा में दल-बदल विरोधी कानून भी कहा गया। दल-बदल भारतीय राजनीति की एक महत्वपूर्ण विशेषता और व्याधि रहा है। अलग झारखंड राज्य के गठन के शीघ्र पश्चात ही यहाँ भी दल-बदल के मामले दृष्टिगोचर होने लगे और झारखंड की पहली से लेकर वर्तमान विधानसभा तक दल-बदल के मामले देखने को मिलते हैं।

Research Paper - 03

“Dynamis of Globalization and Development in India: Debates, Prospects and Challenges ahead for Policy Makers” Resonance, National Journal of Value Education, Bilingual(English/Hindi) Half Early Multidisciplinary Peer Reviewed Referred Journal, Vol. 13.1, January 2025 ISSN No. 2320-7116.

Dr. Ashutosh Kumar Pandey

Abstract

Globalization has accelerated in recent years with the growth of trade, investment, and communication. India's 1990s Liberalization, Privatization, and Globalization (LPG) policy opened new opportunities, driving rapid economic growth and change. However, globalization has its challenges, including economic inequality, environmental harm, and cultural loss. Awareness of these issues has grown, highlighting the need for fairer and more sustainable approaches. As the world becomes more connected, addressing these challenges is essential for a global economy that benefits everyone. The paper attempts to explore the driving forces behind the continued expansion of globalization in India. The study makes an effort to identify the issues that India's policymakers will face in the future, as well as to examine and highlight ongoing debates and discussions.

Keywords: *Economic inequality, Environmental Degradation, Cultural Homogenization, Digilization and Automation*

Research Paper - 04

“India's Central Asia Policy: Strategic Imperatives and Emerging Realities” World Focus, A Premier Indo-Centric Foreign Affairs Peer Reviewed/ Referred Monthly Journal, VOL-46 NUMBER 542, February,2025 ISSN No. 2230-8458, E-ISSN- 2581-5083.

Dr. Ashutosh Kumar Pandey, Popelka Mitra

Abstract

Contemporary strategic and geopolitical demands along with historical and cultural linkages have contributed to the evolution of India's relationship with Central Asia. The "Connect Central Asia" policy intends to establish complete ties through political engagement, economic cooperation, and connectivity initiatives, as well as increased cultural and academic contacts. Initiatives like the International North-South Transport Corridor and Chabahar Port have eliminated geographical barriers and opened new avenues for trades. India's substantial oil, uranium and natural gas deposits can help diversify its energy supply and minimise dependency on the Middle East. Cultural diplomacy has been a key factor in saving India's relations with Central. The study examines significant efforts, difficulties, and the future of India's Central Asia strategy.

Keywords: *Connect Central Asia Policy, Geopolitics, Regional Connectivity, Energy Security, Cultural Diplomacy*

Research Paper - 05

"Food Security in India: Government Initiatives, Challenges And Potential Solutions" Indian Journal of Society and Politics,[International, Peer Reviewed, Multidisciplinary, Bi annual, Bilingual, Journal of Arts and Social Science], Vol 12 (01) : 2025 ISSN : 2348-0084 (Print) Issn: 2455-2127 (Online) (July-December 2024)

https://www.ijsp.in/article_description.php?post_id=Food%20Security%20in%20India:%20Government%20Initiatives,%20Challenges%20and%20Potential%20Solutions

Dr. Ashutosh Kumar Pandey

Abstract

The availability, accessibility, use, and stability of food are characteristics of food security, which is a global concept that aims to ensure that everyone has access to the necessities for an active and healthy life. Though the Indian Constitution does not have any explicit provision regarding right to food, the fundamental right to life enshrined in Article 21 of the Constitution may be interpreted to include right to live with human dignity, which may include the right to food and other basic necessities. The National Food Security Act (NFSA) 2013, which was passed on July 5, 2013, represents a shift in the way that the government approaches food security from a welfare-based approach to a rights-based approach, even though the government has been continuously addressing the issue of "food security" at the household for a long time through the Public Distribution System and the Targeted Public Distribution System. The Act legally entitles up to 75% of the rural population and 50% of the urban population to receive subsidized food grains under Targeted Public Distribution System. In order to receive highly subsidized food grains, nearly two thirds of the population are covered under the Act. The main concerns about food security in India are summarized in this paper, which emphasizes the complexity and diverse character of the issue. It highlights government initiatives and programs like the Public Distribution System (PDS) and the National Food Security Act (NFSA) that are meant to address food security. It also explores the agricultural industry, looking at issues with productivity, rural-urban inequality, and price instability that affect food security. The paper highlights the necessity for a comprehensive strategy that takes into account nutrition, distribution, agriculture, and poverty alleviation. The quest for long-term food security in India is highlighted in the conclusion by highlighting the significance of sustainable agricultural methods and climate change adaptation.

Keywords: *Food Security, Social Security, NFSA*

Research Paper - 06

“Securing Cyberspace and Protecting Citizen's Rights in India: A Comprehensive Overview” Indian Journal of Political Science (UGC Care Listed Journal 317), Vol. No. LXXXVI, No. 1, ISSN 0019-5510(January -March 2025)

Dr. Ashutosh Kumar Pandey

Abstract

Along with the growing reliance on digital platforms in the contemporary era, it has become crucial to safeguard the rights of individuals in the digital domain. This research paper examines India's efforts in securing cyberspace and protecting the rights of citizens in the digital age. It explores the intersection of cyber security and fundamental rights, such as privacy, freedom of expression, and access to information. The paper emphasizes the need for a balanced approach in India that involves data protection regulations, surveillance practices, cyber security education and legal frameworks such as the Information Technology Act and the proposed Personal Data Protection Bill. The paper also addresses concerns surrounding encryption and data security, cyber awareness and education, e-governance, and digital service security. Balancing surveillance and privacy concerns in cyberspace has also been discussed, along with India's efforts in international cooperation. The abstract highlights the significance of cybersecurity startups and innovation in bolstering the country's cybersecurity landscape. In summary, it provides a concise overview of the critical considerations and challenges associated with cyberspace and safeguarding the rights of its citizens in India.

Keywords: *National Cybersecurity Strategy, Legislation, Data Protection, Data Privacy, National Encryption, Cyber Awareness, E-Governance, Startups, Innovation*

Research Paper - 07

“The Middle-Way of Diplomacy: Buddhism and Japan-India Relations”. South India Journal of Social Sciences, Vol. 23, no. 3, June 2025, pp. 19-22, <https://doi.org/10.62656/SIJSS.v23i3.1932> ISSN: 0972-8945 (Print) & 3048-6165 (Online)

Dr. Ashutosh Kumar Pandey, Popelka Mitra

Abstract

Buddhism has served as a uniting factor between Japan and India from its historical origins in cultural exchanges to its current function in economics, diplomacy, and soft power tactics. A fundamental principle of Buddhism, the Middle Way promotes peace and balance while providing a structure for collaboration and dispute resolution. The study analyzes the role of Buddhism in both countries' soft power strategies, exploring its influence on political systems, governance, and bilateral relations. This research explores the historical ties that were established by Buddhist monks, the use of common Buddhist history in political and economic partnerships, and the ways in which both nations use Buddhism to improve their international reputation. It examines instances of cross-cultural dialogue, where Buddhist values such as empathy and mindfulness have influenced political relations. Additionally, the research looks at how Buddhist principles are integrated into policy decisions, shaping strategic choices that impact diplomatic efforts, including Comprehensive Economic Partnership Agreements (CEPA). The research underscores the importance of understanding the shared cultural heritage between the two nations and how it influences global cooperation, cultural diplomacy, and conflict resolution. By studying these dynamics, the research sheds light on the role of Buddhism in fostering diplomatic ties and enhancing global reputations.

Keywords:- *Buddhism, Bilateral Ties between Japan-India, Soft Power and Diplomatic Efforts, Cross-Cultural Dialogues, CEPA.*

Experience of Ph. D. Guidance:

Scholars Registered – 06

Sl. No.	Name of Candidate	Title of Research	Date of Registration
01	Ashish Anand	India's Look west Policy and the changing dynamics of India and Saudi Arabia relations (2014-21)	08.10.2021
02	Popelka Mitra	Buddhism as a soft power in Indian Diplomacy: An analytical study of India's Relations with Japan, South Korea and China Since 2016	11.08.2023
03	Utkarsh Unnayan	Policy Analysis of Start-Up India Initiative in Jharkhand: Problem and Prospects (2016-2022)	05.10.2023
04	Divya Megha Tirkey [JRF]	दक्षिण एशिया में भारत एवं मालदीव का भू-राजनीतिक महत्व एवं उनके मध्य द्विपक्षीय संबंधों का अध्ययन (वर्ष 2008 से 2024 तक)	13.09.2024
05	Rohit Tirkey [JRF]	Regional Aspirations and status of political development of Chattisgarh, Uttarakhand and Jharkhand: A Comparative Study 2000-2024	13.09.2024
06	Abhishek Kumar Mishra [JRF]	The Role of Political Parties in Political Representation of Tribes in Jharkhand Since 2000	21-02-2025

Ph.D. Awarded -01

Sl. No.	Name of Candidate	Title of Research	Date of Registration	Date of Submission	Date of Ph.D. Notification
01	Pervez Shahid Ali	ग्रामीण विकास में ग्राम पंचायत की भूमिका: झारखंड राज्य के गिरिडीह प्रखंड के अलगुंदा पंचायत के संदर्भ में (2010 से 2018 तक)	17.05.2018	15.03.2023	26.09.2024

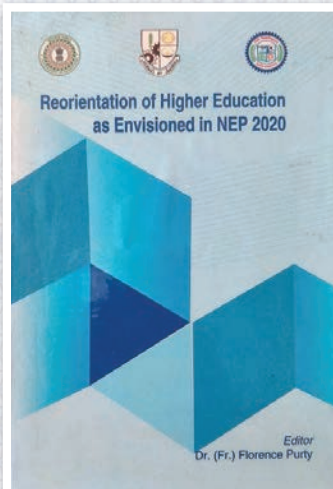
Ph.D. Submitted -01

Sl. No.	Name of Candidate	Title of Research	Date of Registration	Date of Pre-Submission
01	Snehil Anand	दसवीं अनुसूची और स्पीकर की भूमिका: झारखंड राज्य के चुतुर्थ विधानसभा के विशेष संदर्भ में	15.02.2020	11-02-2025

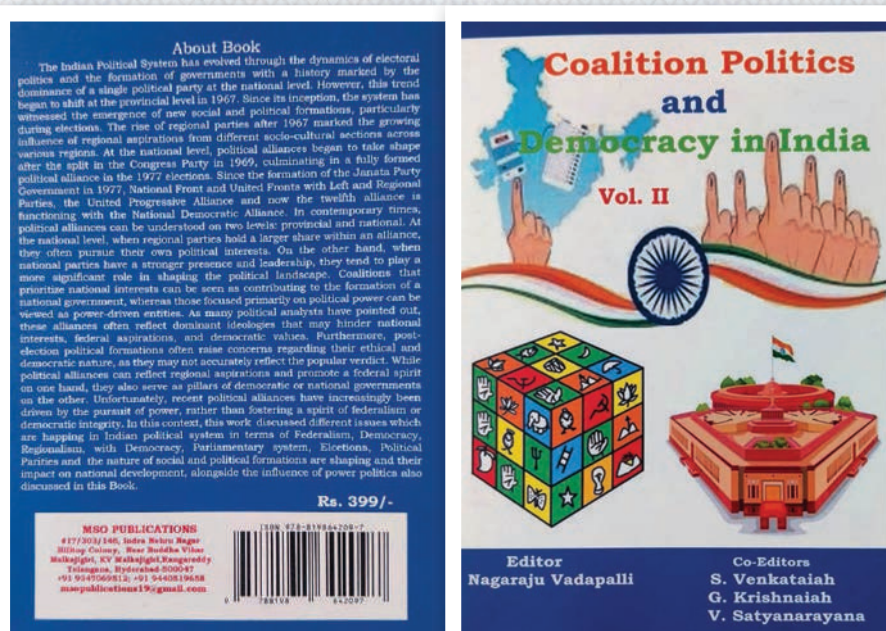
Chapter in Book

1. Contributed a Chapter entitled "Role of Digital Platforms for Quality Enhancement in Education under the National Education Policy 2020: A Comprehensive Overview", on a book Reorientation of Higher Education as Envisioned in NEP 2020 Published by Xavier Publication, Ranchi. ISBN No. 978-9385408-41-0

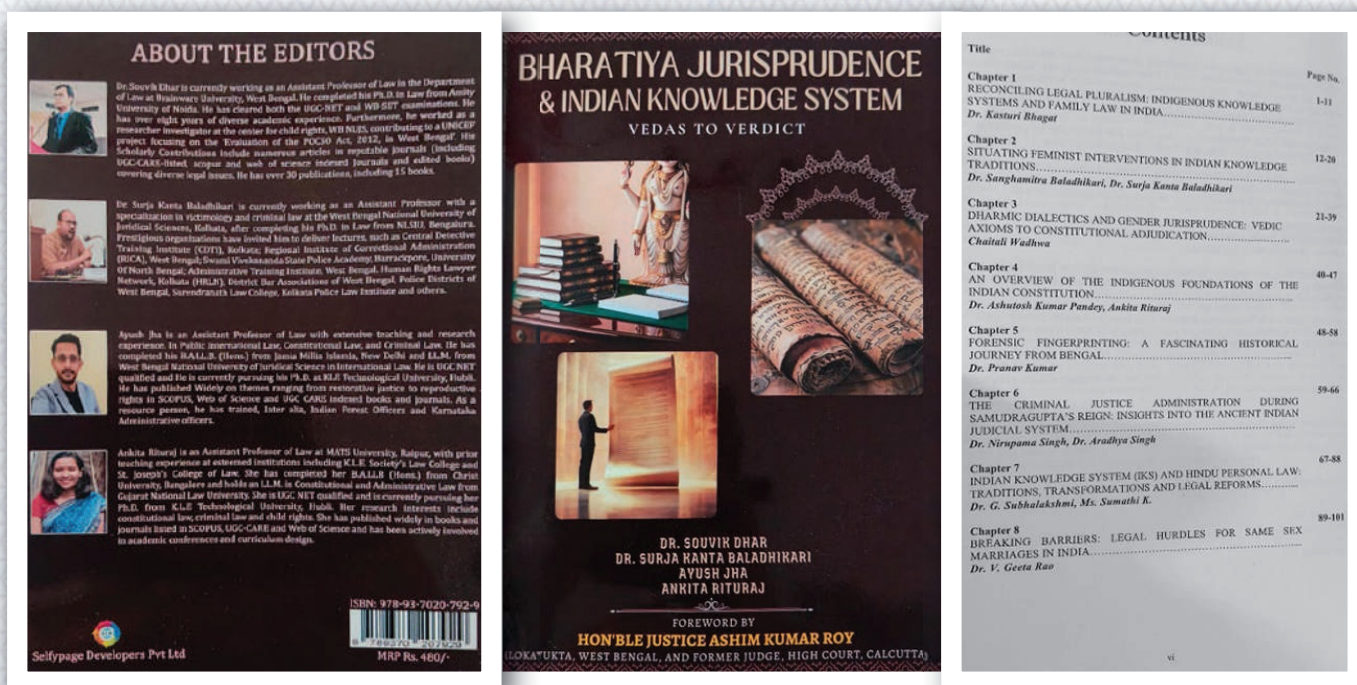
2. Contributed a Chapter entitled “The Dynamics of Coalition Politics in Jharkhand: AN analytical study of the role of Jharkhand Mukti Morcha” on a book Coalition Politics and Democracy in India Published by MSO Publications, Hyderabad, Telangana. ISBN No. 978-81-986420-9-7
3. Contributed a Chapter entitled “An Overview of the Indigenous Foundations of the Indian Constitution” on Edited book Bharatiya Jurisprudence and Indian Knowledge System: Vedas to Verdic, Published by Iterative International Publishers (IIP), Selfpage Developers Pvt Ltd. Volume : 4-2025, e-ISBN : 978-93-7020-704-2 <https://www.doi.org/10.58532/nbennurBJIKSW4> <https://www.iipseries.org/assets/docupload/rsl2025612435B3ACA63EA.pdf>



Index			
ABSTRACT			
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Faculty Development Programme

1. Participated on Faculty Development Programme on Big Data Analytics and High-Performance Computing Organized by Electronics and ICT Academy IIT Roorkee in association with GIET University, Odisha held from 5th Mar 2025 to 09th Mar 2025. <https://eict.iitr.ac.in/wp-content/uploads/EICTIITR-FDP-25-05-63.jpg>
2. Participated on 5 days Faculty Development Program on Generative AI organized by Department of Computer Science & IT, School of Engineering & IT Akra Jain University, Jharkhand held from 24th June 2024 to 28th June, 2025.

Paper Presented in Seminars and Confereces [International/National]:

- Participated and Presented a Paper “Vishwa Guru Bharat: Employing Buddhism as a Soft Power Tools to India’s Advantage” in Dr. Rajendra Prasad National Convention-III on ‘G-20: People Centric Governance & Public Policy’ Organized by Indian Institute of Public Administration, New Delhi. December 21-22, 2023.
- Participated and Presented a Paper “International Trade Agreements of India: Advancing Novel Materials in Global Marketplaces” in 1st International Conference on Advances in Novel materials: Towards Sustainable Future’ Organized by Department of Physics & IQAC, St. Xavier’s College, Ranchi, Jharkhand, India, Sponsored by Jharkhand Council on Science Technology & Innovation, Ranchi and Department of Atomic Energy, Board of Research in Nuclear Sciences. January 20-22, 2024.
- Participated and Presented a Paper “Balancing Friction in Modern Geopolitics: India-China Relation and the Tibet Crises” in 61th All India Political Science Conference and International Seminar on Viksit Bharat @2047 organized by Maharaja Ganga Singh University, Bikaner (Rajasthan) on 18-19 October, 2024. 2)

- Participated and Presented a Paper “Political Representation of Women in Jharkhand, Chhattisgarh and Uttarakhand: A Comparative Study” in 61th All India Political Science Conference and International Seminar on Viksit Bharat @2047 organized by Maharaja Ganga Singh University, Bikaner (Rajasthan) on 18-19 October, 2024.
- Participated and Presented a Paper “Enhancing Jharkhand Startup Ecosystem: Policy Reforms and Strategic Initiatives” in 61th All India Political Science Conference and International Seminar on Viksit Bharat @2047 organized by Maharaja Ganga Singh University, Bikaner (Rajasthan) on 18-19 October, 2024.
- Participated and Presented a Paper “ Hkkjr dh iM+kslh uhfr % ekynho ds fo'ks" k lanHkZ esa Hkkjrh; fons'k uhfr dk ,d leh{kkRed v/;;u ” in 61th All India Political Science Conference and International Seminar on Viksit Bharat @2047 organized by Maharaja Ganga Singh University, Bikaner (Rajasthan) on 18-19 October, 2024.
- Participated and presented a Paper “India’s Neighbourhood First Policy and the Sagar Doctrine: An Analysis in Context of India Maldives Bilateral Relations” in International Conference On Indian Knowledge Traditions And Sustainable Connectivity Vision: South And South-East Asia As Conduit For Regional Integration And Development Organized By Department Of International Relations School Of Social Sciences and Co-sponsored by Indian Council of Social Science Research, New Delhi Maulana Kalam Azad Institute of Asian Studies Kolkata and Indian Council of World Affairs, New Delhi on 19th 20th March 2025.
- Participated and presented a Paper “India's Resurgent Regional Power in East Asia and Buddhist Monastic Networks” in International Conference On Indian Knowledge Traditions And Sustainable Connectivity Vision: South And South-East Asia As Conduit For Regional Integration And Development Organized By Department Of International Relations School Of Social Sciences and Co-sponsored by Indian Council of Social Science Research, New Delhi Maulana Kalam Azad Institute of Asian Studies Kolkata and Indian Council of World Affairs, New Delhi on 19th 20th March 2025.
- Participated and presented a Paper “The Dynamics of Coalition Politics in Jharkhand: An Analytical Study of the Role of Jharkhand Mukti Morcha” in National Seminar on Coalition Politics and Democracy in Indian Society on 21st and 22nd March, 2025, Sponsored by ICSSR-SRC, TGCHE, Hyderabad and UGC-KU Unit and Organized by Department of Political Science, Kakatiya University, Warangal, Telangana State

Name – Dr. Shreya Pandey,
Department of Political Science

ORCID: 0009-0007-2069-8513

Mobile- 7739373799

Email id- spandey63@gmail.com



AWARDED ICSSR MINOR RESEARCH PROJECT

Awarded a **Minor Research Project (2024-25)** with a **grant of Rs. 10 lakhs by the Indian Council of Social Science Research (ICSSR)**, Aruna Asaf Ali Marg, New Delhi-110067 vide letter No. 217/2024-25/ICSSR/RP/MN/GEN dated 07.03.2025I, to work as **Project Director on the project entitled “A Prismatic Study of Migration of Tribals from the State of Jharkhand through the Political, Economic, Social and Cultural Lens: A Case Study of Ranchi, West Singhbhum, Khunti and Simdega Districts”.**

PUBLICATIONS

1. Pandey, Shreya (2023), “Russian Invasion on Ukraine: An Assessment of Its Impact upon Unity, Economy and Enlargement of the EU”, National Institute of Advanced Studies, Global Politics, Discourses, Trajectories, Forecasts, 31 December 2023, https://globalpolitics.in/TWTW_view_articles.php?ArticleNo=1186&url=The%20World%20This%20Year&recordNo=1262.

Abstract

The EU has held onto this belief tenaciously and this was exhibited adequately in their united response to the Russian invasion of Ukraine. The EU in fact expressed its whole-hearted support for Ukraine in the European Council conclusions of 26-27 October 2023. They termed this misadventure of Russia as a violation of the provisions of the UN Charter. The European Council went on to adopt the twelfth package of sanctions in order to inflict economic losses upon Putin so that it militates against his obduracy to wage war against Ukraine. The EU pledged to “continue to provide strong financial, economic, humanitarian, military and diplomatic support to Ukraine and its people for as long as it takes”. The article assesses the impact and implications on EU of the Russia-Ukraine War.

Keywords- *(EU, Russia, Ukraine, sanctions, EU unity)*

2. Pandey, Shreya (2024), “Setting the Stage for India-UK cooperation in the field of AI, Cybersecurity and Climate Change”, in R.P. Pradhan and A. Neelima (eds.) India – UK Partnership in the Indo-Pacific, Kochi, Kerala: Centre for Public Policy Research, ISBN 978-81-964276-6-5.

Abstract

India and the United Kingdom have an established, durable and trustworthy partnership. There is certainly no scope for many troughs in the relationship since the quality and level of mutual engagement are fairly high. Several regional efforts have been made in the Indo-Pacific region in order to institutionalise the concept of non-traditional security threats. Countries in the region, such as Indonesia, Singapore and other Southeast Asian nations, are known to have taken cognizance of these issues. There has been a constant demand to nullify the dichotomy that exists between traditional and non-traditional security threats and to broaden the concept of security, which would take into account the various challenges being faced by people at various levels and in different places. The United Kingdom and India are also seeking to collaborate intensively on an elaborate layout for dealing with non-traditional threats in the Indo-Pacific

region. This will work solely for mutual benefit but shall require another level of thinking, strategies and preparedness, which can, in no manner whatsoever, be myopic. The two partners intend to come together to work in an all-together different sphere of influence and a very different setting, which entails that the operable dynamics will also be unique in nature.

Keywords – (*India, United Kingdom, Indo-Pacific, non-traditional security threats, AI*)

3. Pandey, Shreya (2024), “An Assessment of European Stakes and Concerns in Afghanistan post-2021: An Enduring Commitment or an Exhausted Endeavour?”, in Rajeev Kumar Singh and Shantesh Kumar Singh (eds.) *Emerging Dynamics of India-Afghanistan Relations*, Singapore: Palgrave Macmillan, Springer Nature Singapore Pvt. Ltd. 2024, ISBN 978-981-97-4706-1. (Scopus-indexed)

Abstract

The EU's participation in Afghanistan is tailored in accordance with the requirement of working with the Taliban de facto authorities. However, this cooperation does not amount to according recognition of the Taliban administration or provide legitimacy to the regime. Enduring conditions of peace and stability go hand in hand with the availability of essential goods and services and the engagement of the populace in the workforce. Thus, the EU raised EUR 150 million in 2022 with a trained focus on the well-being of women, girls, minorities, Internally Displaced Persons, and refugees. A total sum of EUR 49 million was allocated to deal with the displacement of the Afghan people within their country and beyond her borders. The EU ensures that all the assistance it provides does not reach the people through the Taliban authorities but through its partners such as the United Nations agencies and international NGOs (non-governmental organizations). The EU aims to help in sectors such as food assistance, healthcare, education, water and sanitation, and protection services based on the humanitarian ideals of independence, impartiality, and neutrality. The EU makes an all-out effort to provide aid in critical scenarios and help Afghan girls and women. Thus, it comes as no surprise that the EU's largesse spent in Afghanistan has amounted to EUR 1.4 billion since its involvement in 1994. This book chapter examines in detail the role, intervention and stakes of the EU in Afghanistan.

Keywords - (*EU, Afghanistan, Taliban, humanitarian assistance, refugees, internally displaced persons*)

4. Wrote the foreword for the book Mishra, D. (2024), *Human Security: The Power to Empower*, New Delhi: Interdisciplinary Institute of Human Security and Governance.

FOREWORD

The enthrusting and innovative title of the book, ‘Human Security: The Power to Empower’ is a very timely intervention that brings to the fore issues and concerns that are of utmost salience to human existence. This compendium of articles highlights the vital role played by the state for the preservation of human existence by means of utilizing their prowess of being a soft as well as a smart power. The diversion of the resources of the state towards sprucing up human security has been dealt with great alacrity in the book. The traditional geopolitical strategies for ensuring overall development of regions and tackling problems such as movement of refugees have also been accommodated and given due currency in the scheme of chapters. The desirable goal of ensuring safety, security and well-being of mankind cannot be fathomed without ensuring the protection, nurturing and empowerment of one half of the human race that comprises of women. The rampant trafficking of women which gives a severe jolt to the edifice of society and the foundations of the state has also been taken up for discussion in the book. Apart from such ever-present lurking dangers in the society, it has been pointed out that the reliance on technology has increased to unimaginable levels which has led to the surfacing of new threats such as cyber misogyny.

- Certificate of Reviewing of International Journal under Sage Publications issued on 26 July 2025.

III. Ph.D Supervision

Sl. No.	Name of Scholar	Date of Registration	Ph.D Topic
1.	Shubham Anand	28.02.2025	India-Canada Relations: An Analytical Study of Canadian Immigration Policy with special reference to the Indian Diaspora (2015-2024)
2.	Mukesh Kumar	24.04.2025	Global Safeguards for Individuals Against Violence and Abuse: An Impact Assessment of the UN Mechanism for Implementation of Human Rights
3.	Rahul Kumar	28.05.2025	The Chinese Dream and Viksit Bharat 2047: An Assessment of Convergence, Divergence and the Future of Sino-Indian Relations
4.	Chandan	20.8.2026	ग्राम पंचायत के विकास कार्यों में जनजातियों की सहभागिता : रांची एवम खूंटी जिले के चयनित गावों का अध्ययन (2010-2025)

I. PAPER PRESENTATION IN CONFERENCES/ SEMINAR/ KEY NOTE SPEAKER/ RESOURCE PERSON

- “Making Sense of Russia-Ukraine Conundrum within the ambit of Indian Foreign Policy”, paper presented at Two-day National Seminar on “ Atmanirbhar Bharat: Towards Self-Reliant India” organised by Guru Nanak College, Department of Economics, Dhanbad, 10-11 February 2023.
- “Making Sense of Baltic Nationalism: Post Second-World War to Gorbachev’s Regime”, paper presented at International Conference on “The Baltics in a Changing Europe” organised by Jean Monnet Chair, Centre for European Studies, School of International Studies, Jawaharlal Nehru University, New Delhi, 23-24 February 2023.
- Participated and presented as a Panellist in Session no. 2 titled “India-UK Partnership: Addressing Non-Traditional Security Threats” in the “International Conference on India-UK Partnership in the Indo-Pacific” organised by the British High Commission, New Delhi and Centre for Public Policy Research (CPPR), Kochi at Hotel Avenue Regent, Kochi, Kerala, 23-24 March 2023.
- “The Onslaught of Covid 19 on the Nordic Welfare Model”, paper presented at International Conference on “Current Global Developments and the Nordic” organised by Jean Monnet Module, Centre for European Studies, School of International Studies, Jawaharlal Nehru University, New in collaboration with Nordic Centre for India, 10-11 May 2023.
- Spokes as Guest Speaker on “Understanding the Sui Generis State of Israel: An Assessment on the Occasion of the Diamond Jubilee of its Creation”, at the plenary session of the Third Bihar Social Science Congress on the focal theme of “Growth, Inequality and Justice” organised by the Bihar Social Science Academy, Department of Political Science, Department of Public Administration, M.U., Bodh Gaya and IIPA Bihar Regional Branch, Patna, Magadh University, Bodh Gaya (Bihar), 30-31 May 2023.
- Invited as a Resource Person to speak on the topic, “Research Methodology in Praxis: Blending of Qualitative and Quantitative Techniques” on 25 August 2023 at the 14-day Inter- Multi-disciplinary Refresher Course in Research Methodology and Statistical Analysis (18.08.2023 – 31.08.2023) organised by the UGC-Human Resource Development Centre, Morabadi Campus, Ranchi University, Ranchi.

7. "The Scope of Reasoning and Rationality in Europe in the wake of the Russia-Ukraine Conflict", paper presented at the International Conference on "Changing Contours of the European Union: Crisis and Resilience", organised by Jean Monnet Module Culture, Society, Institutions and Change in the European Union and Centre for European Studies, School of International Studies, Jawaharlal Nehru University, New Delhi, 14-15 September 2023.
8. Invited as Resource Person to speak on the topic, "Stages of Thesis Writing: The Trajectory from Inception to Completion" on 22 September 2023 at the Guru Dakshta the 18th Faculty Induction Programme (2.09.23 to 29.09.23) organised by the UGC-Human Resource Development Centre, Morabadi Campus, Ranchi University, Ranchi.
9. "Climate Adaptation: A Makeshift Strategy or the Need of the Hour?", paper presented at the International Conference on "Environment, Aquaculture and Sustainable Agriculture" organised by Department of Botany, St. Xavier's College, Ranchi in association with International Foundation for Environment and Ecology (IFEE), Kolkata in collaboration with Confederation of Indian Universities (CIU), New Delhi, 22-24 September 2023.
10. Convenor of the International Conference on "Understanding the European Union: Structures, Processes and Challenges" organized by the Jean Monnet Module- Culture, Society, Institutions and Change in the European Union co-funded by Erasmus + Program of the European Union in collaboration with the Department of Political Science, St. Xavier's College, Ranchi on 3-4 November 2023.
11. "EU and its Covid-19 Response: Dealing with the Emergent Problem or Preparing for the Future?", paper presented at the International Conference on "Understanding the European Union: Structures, Processes and Challenges" organised by Jean Monnet Module (Co-funded by the European Union) and the Department of Political Science, St. Xavier's College, Ranchi University, Ranchi, 3-4 November 2023.
12. "India- Middle-East- Europe Economic Corridor", paper presented at the Second NIAS-KAS Annual Conclave, Europe in 2023, organised by National Institute of Advanced Studies (NIAS) and India Office, Konrad Adenauer- Stiftung (KAS), New Delhi in collaboration with Kristu Jayanti College, Autonomous, Bengaluru, University of Madras, Chennai, 6-7 November 2023.
13. "The EU: Dealing with the Ukraine War, Economy and International Political Divides", paper presented at the International Workshop on "2023: The World This Year", organised by National Institute of Advanced Studies Bangalore in collaboration with Kristu Jayanti College (KJC, Bengaluru), 15-16 December 2023.
14. Invited as Resource Person to speak on "Caste, Gender and Tribal Identity" in the two-day National Seminar on "We the People @75: Navigating Social Justice and Global Peace" organised by the Department of Political Science and Department of Law, School of Humanities and Social Sciences, School of Law, Central University of Haryana, 6-7 February 2025.
15. "Profiling the Quagmire of Climate Change: An Assessment of Real-life Problems in Nation-states and Possible Global Solutions", paper presented at the 23rd Annual Conference of the Indian Association of Social Science Institutions, organised by the Birla Institute of Technology, Mesra, Ranchi and Institute of Human Development – Eastern Regional Centre, Ranchi, 25-27 October 2024.
16. Invited as Key Note Speaker to speak on "Global Peace and Security", in the two Days National Seminar on "We the People @75 Navigating Social Justice and Global Peace" organised by Department of Political Science and Law, Central University of Haryana and sponsored by Indian Council of World Affairs, 6-7 February 2025.

17. “Cross Border Connectivity in South and South-East Asia : Pathways to Regional Integration”, paper presented at the International Conference on “Indian Knowledge Traditions and Sustainable Connectivity Vision: South and South-East Asia as a Conduit for Regional Integration and Development” organised by the Department of International Relations, School of Social Sciences, Central University of Jharkhand, Ranchi and co-sponsored by ICSSR, New Delhi, MAKAIS, Kolkata and ICWA, New Delhi, 19-20 March 2025.
18. Invited to speak as Resource Person on “World Water Day”, at the “International Webinar on World Water Day” organised by the Department of Botany, St.Xavier’s College (Autonomous), Ranchi University, Ranchi, 22 March 2025.
19. “EU-India Bilateral Construction 2025: Time for a Rethink and Rejig in Troubled Waters” paper presented at the International Conference on “The EU, its Policies and its Relations in Times of Transitions” organised by the European Union Studies Association Asia Pacific (EUSAAP), the University of Macau (UM), the Institute of European Studies of Macau (IEEM) and European Studies Association Macau (EUSA-Macau), 8-9 June 2025.
20. “Resurrection, Reckoning and Rise of the EU: Some Take-aways from the Indian Experience” paper presented at the International Conference on “The European Union in an Illiberal World” organised by the Global Governance Research Europe, Universite Paris 1, Pantheon Sorbonne, 22 June 2025.
21. Invited as a Resource Person to speak on the topic “Complementarities of Different Approaches in Data Analysis Methods of Quantifying Qualitative Data” at the Inter/ Multi-disciplinary Refresher Course in Research Methodology and Statistical Analysis organised by the University Grants Commission, Malaviya Mission Teacher Training Centre (MMTC), Ranchi University, Ranchi, 27 June 2025.
22. “Political Security Ensnared or Ensured? An Assessment of the Authoritarian Regime of Vladimir Putin in Russia”, paper presented at the International Conference of the 28th World Congress of Political Science, Seoul, 12-16 July 2025.
23. “Jal, Jungle, Jameen as Pillars of Adivasi Existence and Identity of India” paper presented at the International Seminar on “Birsa Munda and Decolonizing Jajatiya Studies” organised by the Centre of Indian Languages, Jawaharlal Nehru University, New Delhi, 7-8 August 2025.
24. “Europe’s Strategic Dilemma in the Russia-Ukraine War: Evaluating Realist and Neo-liberal Responses” paper presented at the two-day International Conference on “Rethinking International Relations in an Evolving World Order: Emerging Trends and Challenges” organised by the Forum for Global Studies in collaboration with Southern Federal University, Russia, 11-12 August 2025.

COURSES/ ORIENTATION PROGRAMMES/ WORKSHOPS

- I. Successfully completed UGC-Sponsored Refresher Course in Political Science and Public Administration organised by University Grants Commission Malaviya Mission Teacher Training Centre (MMTC), Ranchi University, Ranchi (2024-2025 Online Courses), 18 March – 31 March 2025.

Name of the Faculty- IVANA CHAKRABORTY

ASSISTANT PROFESSOR

DEPARTMENT OF SOCIOLOGY

Email- ivanachakraborty@sxcran.org



Book Chapter

Name of the Book—Sociology for Learners- Volume I (Based on New Education Policy 2020)

Name of the Chapter- Economy & Society

Year of Publication – 2022

ISBN: 978-93-90447-81-7

Brief Description- The chapter reflects on Max Weber’s interpretive perspective of sociology. It lays out the foundations of his theory of social action, authority, and institutions. It further analyses how economy and society are interlinked through structures like bureaucracy, law, religion, and domination. The chapter introduces the readers to Weber’s famous typology of authority (traditional, charismatic, legal-rational), explains the role of rationalization in modern society, and shows how economic life is embedded in social and cultural contexts.

Conference Presentations

1. Two-Day International Conference (21-22 June, 2025) on Tribal Resistance, Resilience and Reimagining Future: Celebrating 150 years of Bhagwan Birsa Munda, held at IIT Madras.

Title of Paper: Obscured Emotionality: A Sociological Analysis of Santhali Folk Songs

2. 23rd IASSI Annual Conference (October 25-27, 2025) – “Integrating Indigenous Knowledge of Tribal Communities and Their Traditional Practices to Enhance Sustainability Efforts, BIT Mesra and IHD Eastern Region

Title of Paper: Integrating Indigenous Knowledge of Tribal Communities and Their Traditional Practices to Enhance Sustainability Efforts

3. Two- Day International Conference (19-20 March 2024) Indian Knowledge Traditions and Sustainable Connectivity Vision: South and South East Asia as Conduit for Regional Integration and Development, Organised by Department of International Relations, Central University of Jharkhand, Ranchi, co-sponsored by ICSSR, New Delhi, Indian Council of World Affairs, New Delhi, and Maulana Abul Kalam Azad Institute of Asian Studies, Kolkata

Title of Paper: South & South East Asia: Re- visiting, Reviving & Rejuvenating Historical Cultural Ties in the era of Globalization

4. International Conference on Understanding the European Union: Structures, Processes, and Challenges (November 3-4, 2023 St Xavier’s College, Ranchi) – “e-Governance and the Politics of Identification – Unique Identities, Citizenship, and State in Contemporary India and Europe: A Comparative Analysis”.

Title of Paper: “E- Governance and the politics of identification- unique identities, citizenship and state in contemporary India”. (Non- Traditional Security Threats)

My paper seeks to understand “the intersections between E- governance, artificially created citizen identities by the state and sociology” which is subsumed under the broader domain of ‘politics and sociology’ and ‘technology and sociology’. Artificially created techno- social identity formations for the purposes of E- governance is an important social phenomenon that I would like to delve upon through the analysis of the

interlinkages between identity, citizenship, state and the larger society. Artificially created technological identities for purposes of E- governance by the State can be a vital lens through which the social fabric of the modern society may be analysed. Emile Durkheim had referred to modern forms of solidarity as ‘organic solidarity’ which he saw as emerging from the interdependencies in modern society. One of the objectives of this paper is to explore how artificially created technological identities produces social relationships and is in turn affected by them.

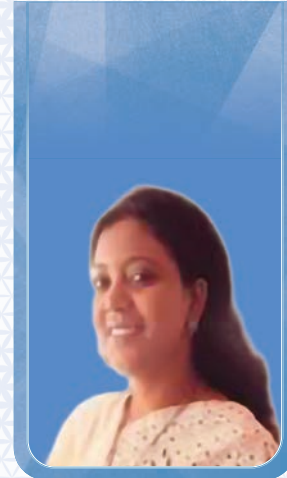
I would further like to explore how these identities become the basis of negotiation between the state and the citizens. The fact that technological identities are accepted and acknowledged by citizens despite the challenges to privacy and other concerns is indicative of the fact that the individuals rely on these artificial identities as bargaining points for access to social resources and rewards. The scope of this paper includes an investigation into how the state is aiming at defining its relationship with individuals through forms of what may be referred to as “coded relationships”. Coded citizenship can be viewed as the datafication of a population, or the conversion of individuals into data for the purpose of ensuring their administrative manageability. This process results in the unprecedented translating into data of several aspects of society. Simultaneously, coded citizenship transforms a disparate population into uniquely identifiable subjects through an information system’s purported ability to “de-duplicate”. I seek to explore the tensions that arise from this dual focus on uniqueness as well as on the collective manageability.

The paper would focus on examining the interface between society and technology in constructing situated forms of modernity that are simultaneously new and contiguous with prior formations. The larger objective is to be able to derive new insights into technology-mediated social identities in India. These ideas can further be used to explore new technologies of human legibility in other geographical settings, their utilization in converting populations into machine-readable data, and the individualities of the subjects they are meant to govern, categorize and manage.

Name of The Faculty/Researcher- **SNEHA S. KACHHAP**

DEPARTMENT OF SOCIOLOGY

Email- snehakachhap@sxcran.org



Toppo, A. O. M., (she/her), Kachhap, S. S., (she/her), & Minj, N. S., (she/her). (2024). Locating Indian Adivasi women's struggles in relation to global Indigenous feminisms. *International Feminist Journal of Politics*, 26(5), 1001–1024. <https://doi.org/10.1080/14616742.2024.2428789>

Presented a paper titled **“The Development of Labour zone and the Process of Ethnicization of Tribal Labour”**, at the conference Science, Humianism and the Making of Modern India at Indian Museum Kolkata on 9-10 January 2023 organized by Centre for World Environment History, University of Sussex.

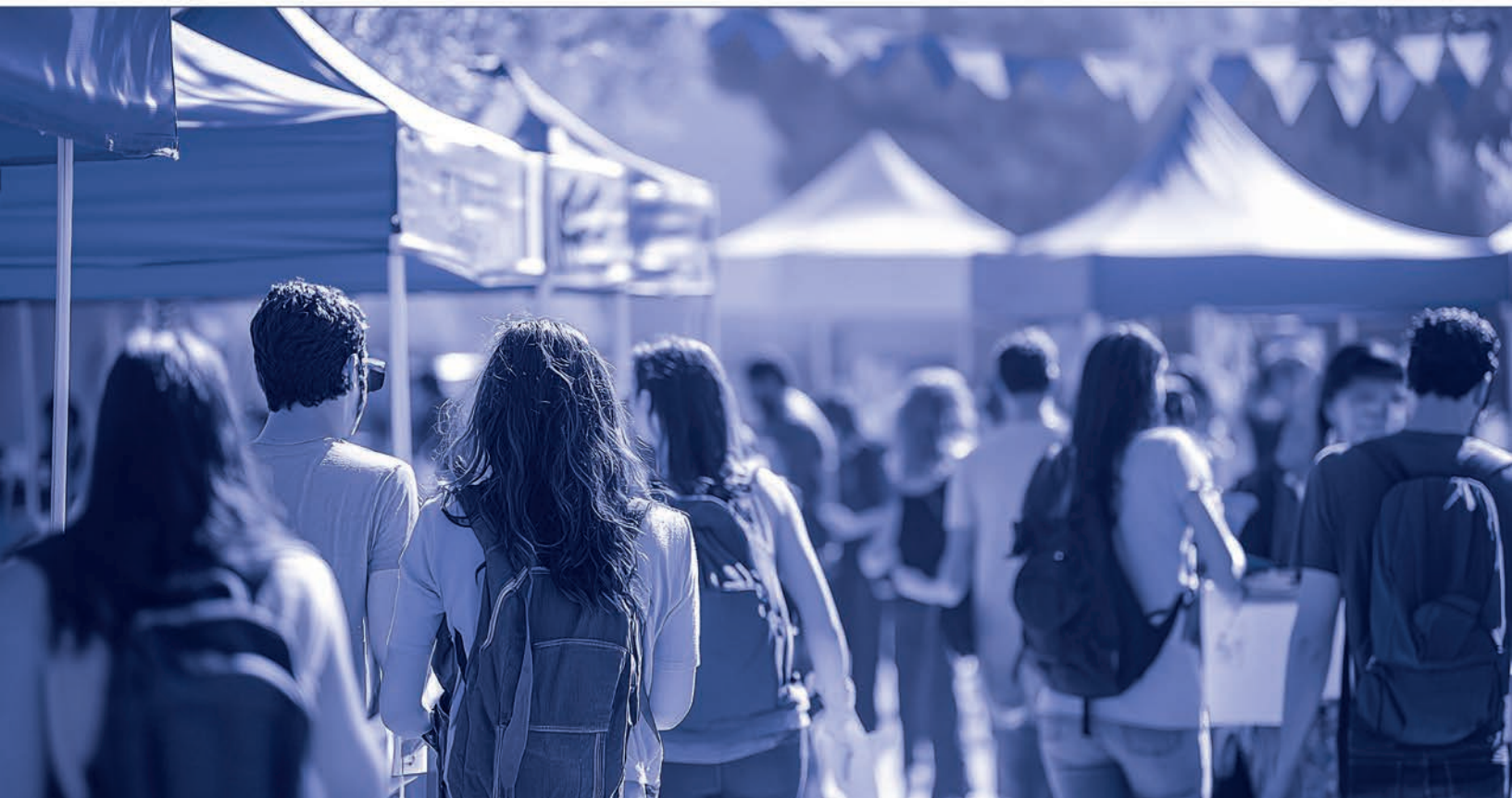
Presented a paper titled **“Encountering Social Ecology in Adivasi Worldview”**, Held on 14-16 Nov 2022, in International Conference on Environment, Forestry and Sustainable Agriculture organized by Department of Botany, St Xavier's College, Ranchi and International Academy of Science and Research Kolkata.

Mentor at the Young Scholars Workshop Round 2 (22nd-24th July 2024) Jharkhand Women's Studies Project supported by Indian Association for Women's Studies(IAWS).

Presented a paper titled **“Nagpuri Songs and the Popular Culture a Study Exploring the representation of Gender in Society”** in Gender and Marginalization in Mid-Eastern India: Experience from Jharkhand, Chattisgarh and Bihar, jointly organized by Indian Association for Women's Studies, Dr Shyama Prasad Mukherjee University, Ranchi, Guru Nanak College, Dhanbad on 29th -30th November 2024.

PRACTICAL APPRENTICESHIP EDUCATION JOBS PREPARING EXPERTISE PROCEDURAL KNOWLEDGE ACCOMPLISHMENT RESULTS GOALS FUTURE LEARN E-LEARNING ACHIEVEMENT EDUCATION HOMEWORKS PREPARATION SERVICE APPRENTICE VOCATIONAL EDUCATION QUALIFICATIONS CAREER DEVELOPMENT OCCUPATION TUTORIAL SKILLS TECHNICAL TRAINING EMPLOYMENT ORGANIZATION TALENTS VOCATION

Vocational and Education



Name of the Faculty/Researcher- Dr. Sanyukta Kumar

Department of Biotechnology

Email- sanyukta@sxsc.org

Web of Science ID- ODL-3066-2025

ORCID ID- 0000-0002-2997-8171



- Total Number of Research papers published- 1
- Total Number of Research Papers Presented in Seminar/Conference- 1

Research article-01-

The Microbiology and Traditional State of Fermented Beverage Handia: A Review

Abstract

Fermentation is one of the ancient techniques of food processing and is a common practice all across the world. Handia is a fermented rice beverage common to ethnic tribes of the eastern region of India. It is prepared by application of an amylolytic starter culture called Bhakhar which is a dough-like mixture of powdered rice and herbs and the exact composition of which varies from community to community. Malto-oligosaccharides produced by the action of amylolytic starter culture compensates for dehydration due to water-retaining capacity. The microbial flora and antioxidant activity of Handia are attributed to the type of rice and herbs used. The most common types of microorganism found in Handia are yeast-like *Saccharomyces cerevisiae* KpY, *Hanseniaspora guilliermondii* G1 and bacteria such as *Pediococcus lolli*, *Lactobacillus* sp., and *Bifidobacterium* sp., exhibiting antimicrobial activity against several bacteria viz. *Shigella dysenteriae* MB14, *Salmonella typhi*, *Micrococcus luteus*, *Staphylococcus aureus*, *Vibrio cholerae*, and *Escherichia coli* which are infamous enteropathogens. Antioxidant activity like free radical scavenging and chelating activity has been observed however specific antioxidant has not been identified till date. There are traditional claims of its therapeutic use in several acute and chronic diseases like fever, cholera and dysentery. The claimed health benefits of Handia and the presence of beneficial microflora in it, are suggestive of using it as probiotics.

Keywords : *Fermentation, Handia, Bhakhar, microbial flora, therapeutic use, Probiotics*

Conference/Seminar-

Presented a paper on “Amelioration of soil acidity induced Al-toxicity by co- inoculation of PGPR and Mycorrhizae on morphological and biochemical changes in Groundnut (*Arachis hypogaea* L.) seedlings” in the International Conference on Environment and Sustainable Agriculture held from 14-16 November 2022 at St. Xavier’s College Ranchi.

Book Chapter Published-

- Contributed to Chapter 5 of book titled “**Plant Molecular Breeding in Genomics Era Applications**”
- Year of publication: 2024
- **Springer Nature Switzerland AG 2024,**
URL: <https://doi.org/10.1007/978-3-031-68598-9>

Chapter 5 Transcriptome-Based Prediction Breeding

Humdah Qayyum, Mohsin Ali, Kumari Surekha Mahto, Sanyukta Kumar,
Alvina Gul, and Mukesh Nitin

Abstract Transcriptome analysis using RNA-sequencing holds a substantial importance in perspective of accelerating marker-assisted breeding and genetic transformation in plants. It not only assists in establishing better marker-trait associations but also helps in identification of functionally relevant molecular markers that modulate significant agronomic traits. Moreover, the use of transcript information can contribute to develop functional SNP markers for a single quantitative trait, which can subsequently be employed to improve the quantitative trait prediction accuracy and phenotypic expressions in plant breeding initiatives. The application of these SNPs makes it possible to evaluate genetic diversity, predict hybrid performance, germplasm variations, test seed purity and finally solve the challenges of biological epistasis, all of which contribute to an advancement in molecular breeding. Although transcription profiles appear to be a potential alternative to traditional markers in prediction breeding, additional study with larger data sets is required to determine both the performance of the predictive models and their application in agricultural systems.

Keywords Breeding · Transcriptome · Prediction · GWAS · TWAS

H. Qayyum
College of Agriculture, Guangxi University, Guangxi, China

K. S. Mahto · M. Nitin (✉)
Department of Technology Biosciences, South Samaj Street, DigianalixTharpakhna, Ranchi,
Jharkhand 834001, India
e-mail: digianalix@gmail.com

M. Ali
Beijing, China
e-mail: digianalix@gmail.com

S. Kumar
Department of Biotechnology, St. Xavier College, Ranchi-834001, Jharkhand, India

A. Gul
Department of Plant Biotechnology, Rahman School of Applied Biosciences (ASAB), National
University of Sciences and Technology (NUST), Atta-Ur, Islamabad, Pakistan

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J. M. Al-Khayri et al. (eds.), *Plant Molecular Breeding in Genomics Era*, Advances in
Plant Breeding Strategies 4, https://doi.org/10.1007/978-3-031-68598-9_5



Advances in Plant Breeding Strategies 4

Jameel M. Al-Khayri
Krishnananda Pralhad Ingle
Shri Mohan Jain
Suprasanna Penna Editors

Plant Molecular Breeding in Genomics Era Applications

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Name of the Faculty/Researcher- Shiv Shankar Prasad

Department of Biotechnology

Email- shivjibt15@gmail.com

ORCID ID- 0009-0006-8035-8433



- Total Number of Research papers published- 2
- Total Number of Research Papers Presented in Seminar/Conference- 2

Research article -01

Role of silver nanoparticles in dye degradation

Shiv Shankar Prasad*

Department of Biotechnology, St. Xavier's College, Ranchi, Jharkhand, India

Abstract

Large numbers of effluent are generated from industries after chemical processing. The discharge of these effluents directly in water bodies by textile, food, paper and pharmaceutical industries causes water pollution. Among all these contamination, toxic chemical dyes are one of the major pollutants. The discharge of dyes- containing water without any prior treatment, directly into water bodies causes various harmful effects e.g. deteriorate the crops fertility and quality if dye contaminated water is used for irrigation purpose, decrease the penetration intensity of sunlight which affects photosynthesis of aquatic plants, decreases the oxygen content in water-bodies which is detrimental for aquatic animals and is highly toxic. Hence, it is an urgent need to treat these dyes- contaminated water properly before its discharge to water bodies like river, lake, drain etc. However, several physical and chemical methods are available to detoxified these dyes contaminated water, but still, they have limitations including high running cost, limitation to few dyes only due to stable structure of dyes molecule, labor intensive process, generation of another toxic chemical etc.

In present studies, we are capable to degrade azo dye by newly isolated bacteria. Further, synthesized silver nanoparticles were used to enhance dye degradation. The nanoparticles were characterized by UV-visible spectroscopy and silver nanoparticles were used further for dye degradation potential.

Keywords : *silver Nanoparticles, dye degradation, UV-visible spectroscopy, bacteria.*

Research article - 02

Biosurfactant: An Industrial Useful Product

Shiv Shankar Prasad*

Department of Biotechnology, St. Xavier's College, Ranchi, Jharkhand, India

Abstract

Biosurfactants are surface- active compound that accumulate between two phases (aqueous and non-aqueous), reduce surface tension and stabilizing emulsion. These are usually amphipathic with both hydrophilic and hydrophobic properties. Biosurfactants are classified into six major groups based on chemical composition. These are-glycolipids, lipoproteins, neutral lipids, phospholipids, substituted fatty

acids and lipopolysaccharides. Several microbial species have been reported that are capable to produce biosurfactant including *Pseudomonas*, *Bacillus*, *Rhodococcus*, *Candida*, and *Acinetobacter*. There are certain advantages over chemical surfactant like biodegradable, low toxicity and biocompatibility. Biosurfactant are widely used for enhanced oil recovery, oil spill clean-up, cosmetics industry, pharmaceutical and textile industry.

In present study, we have isolated a potent biosurfactant producing microorganism from natural environment. A single isolate of pure culture was isolated by serial dilution method. The isolate was identified by 16S rDNA sequencing method. These identified bacteria were cultured in Nutrient broth media with 2 % glucose as suitable carbon source. The potent isolate was screened in nutrient agar media with CTAB and methylene blue. Further E24 method with kerosene oil as emulsifying agent was used to identify biosurfactant. The culture was preserved in glycerol media, as master culture at -20 °C while working culture was stored at 4°C in refrigerator. The production of bio surfactant was monitored in Minimal salt media with different salts concentration. The optimal production was analysed at different temperature and pH condition. The types of lipids present in biosurfactant were identified by thin layer chromatography method. The surface tension was measured by using capillaries tube analytic method. Further, FTIR and LC-MS method are needed for product analysis.

Keywords : *Bio surfactant, Isolation, TLC, Analysis.*

Conference/Seminar-

1. Presented a paper of title “Role of silver nanoparticles in dye degradation with microbes” at Birla institute of Technology, Mesra, Ranchi, Jharkhand had organized a national conference on ‘Biotechnology for sustainable development (BSD-25)’ on March 27 to 29, 2025.
2. Presented a research paper on entitle “Biosurfactant: an industrial useful product” in three days international conference on Emerging sustainable Technologies, Policies and Methodologies” held 30th November and 1st December, 2024 at Marwari College, Ranchi.
3. Presented a research paper on entitle “Enhanced Production of Exopolysaccharide by Newly isolated Microbes” in three days international Conference on 1st International Conference on Advances in Novel Material: Towards Sustainable Future held on 20th to 22nd January, 2024, organized by Department of Physics, St. Xavier’s College, Ranchi.
4. Presented a research paper on entitle “Mussel feed preparation: A vital step in freshwater pearl culture technology” in the international Conference on Environment, Aquaculture and Sustainable Agriculture at St. Xavier’s College, Ranchi from 22nd to 24th September, 2023.
5. Presented a research paper on entitle “Biodegradation of Synthetic Dyes” in Two-day National Conference (Multidisciplinary) and Symposium on Climate Change: Challenges and Opportunities organized by IQAC and University Department of Zoology, Ranchi University, Ranchi on 25th and 26th May 2023.
6. Presented a research paper on entitle “Biodegradation of E-Waste” on Interdisciplinary international conference on Emerging Sustainable Technologies, Policies and Methodologies (IICESTPM-2023) held on 12th and 13th May, 2023 and organized by Marwari College, Ranchi.

A patent under process of the title “Animal Shell Upcycling Machine” application No. 394818-001, Cbr No. 211360, Cbr Date: 11/09/2023 at Controller General of Patents, Design and Trademarks, Department of Industrial Policy and Promotion, Ministry of commerce and industry, Government of India.



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क्रम सं/ Serial No. : 171026



पेटेंट कार्यालय, भारत सरकार **The Patent Office, Government Of India**
डिजाइन के पंजीकरण का प्रमाण पत्र **Certificate of Registration of Design**

डिजाइन सं. / Design No. : 394818-001
तारीख / Date : 11/09/2023
पारस्परिकता तारीख / Reciprocity Date* :
देश / Country :

प्रमाणित किया जाता है कि संलग्न प्रति में वर्णित डिजाइन जो **ANIMAL SHELL UPCYCLING MACHINE** से संबंधित है, का पंजीकरण, श्रेणी 15-99 में 1.Dr. Akalesh Kumar Verma 2. Dr. Ritesh Kumar Shukla 3.Dr. Sweta Singh 4.Dr. Shiv Shankar Prasad 5.Dr. Rezina Ahmed के नाम में उपर्युक्त संख्या और तारीख में कर लिया गया है।

Certified that the design of which a copy is annexed hereto has been registered as of the number and date given above in class 15-99 in respect of the application of such design to **ANIMAL SHELL UPCYCLING MACHINE** in the name of 1.Dr. Akalesh Kumar Verma 2. Dr. Ritesh Kumar Shukla 3.Dr. Sweta Singh 4.Dr. Shiv Shankar Prasad 5.Dr. Rezina Ahmed.

डिजाइन अधिनियम, 2000 तथा डिजाइन नियम, 2001 के अध्याधीन प्रावधानों के अनुसरण में।

In pursuance of and subject to the provisions of the Designs Act, 2000 and the Designs Rules, 2001.

जारी करने की तिथि
Date of Issue : 29/05/2024



Signature
उत्पाद की पंजीपति

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Name of the Faculty/Researcher- Dr. Alfred Besra

Department of Biotechnology

Email- gabrial.alfred@gmail.com

Web of Science ID: ODJ-7426-2025

ORCID ID: 0000-0002-5703-1161



Research article-01

Elucidating role of long non-coding RNAs of *Tamarindus indica* Linn. in post-transcriptional gene regulation

Abstract

Tamarindus indica Linn., commonly known as tamarind, is a rich source of carbohydrates, proteins, lipids, fatty acids, vitamins, minerals and bioactive compounds. It is well established that long non-coding RNAs (lncRNAs) plays an important role in transcriptional, post-transcriptional and epigenetic regulation. Despite the availability of tamarind genome information, a handful of studies have been done on its non-coding genome, especially lncRNAs. In this study, we have computationally predicted lncRNAs from the coding DNA sequences of *T. indica* and analysed the sequences. We experimentally validated seven randomly chosen lncRNAs by performing quantitative Real Time Polymerase Chain Reaction (qRT-PCR). 320 lncRNAs have been predicted and sequence analysis of these predicted, lncRNAs reveals the presence of different motifs and tandem repeats. Along with the experimental validation of 7 randomly chosen lncRNAs, functional analysis of the predicted lncRNAs and their targets elucidated their roles in various biological pathways. We believe prediction and validation of the lncRNAs along with their interaction with mRNAs will enhance our knowledge about the non-coding genome of tamarind and their involvement in post transcriptional gene regulation, medicinal properties, metabolic engineering, stress tolerance and genome editing.

Keywords: Coding DNA sequence (CDS), Long non-coding RNAs (lncRNAs), Open Reading Frame (ORF), Quantitative Real Time Polymerase Chain Reaction (qRT-PCR), *Tamarindus indica* Linn.

Research article-02

Efficient regeneration protocol for callus and shoot induction from recalcitrant *Phaseolus vulgaris* L. explants under optimum growth conditions

Abstract

Callus is the most significant morphogenic response obtained in plant tissue culture studies. It can be used for micropropagation or to create transgenic lines. *Phaseolus vulgaris* L. (common bean) is one of the economically important crops with a great nutritional value. However, very little effort has been made to regenerate callus from *P. vulgaris* explants. Six explants were used namely root tip, leaves, plumule, radicle, cotyledon and embryo to develop a callus from *P. vulgaris*. The minimum days for callus induction was 10 days in plumule, radicle and embryo explants, while the maximum was 15 days in cotyledon explants with the callus induction percentage of 75%. The largest callus was found to be 2.77 gm in weight and 2.5 cm in diameter in MS medium. Medium with different concentrations of plant growth regulators (PGRs) showed different growth pattern in callus induction. Culture medium with 1.50 mg/l of BAP, 0.50 mg/l of 2, 4-D and 0.10 mg/l of NAA showed the best result in callus induction. Higher concentration of BAP (2.00 mg/l), along with 0.25 mg/l of 2, 4-D was ideal for shoot regeneration and maturation. Shoot induction medium

along with 2.00 mg/l of NAA concentrations were found to be best for rooting. It was found that plumule and radicle favor callus induction, however, they are also potent for shoot and root induction. Knowledge gained in this study will be useful in developing a standard protocol for plant regeneration from *P. vulgaris* explants and will also be useful in creating transgenic line of *P. vulgaris*.

Keywords: *Callus induction, auxin, cytokinin, Phaseolus vulgaris, shoot regeneration*



Conference/Seminar-

- 1) Paper presented on the topic "Structural characterization of differentially expressed allene oxide synthase and allene oxide cyclase gene in *Vigna mungo* upon Mung bean yellow mosaic India virus infection" in the International Conference on Environment, Aquaculture and Sustainable Agriculture, organized at Department of Botany, St. Xavier's College, Ranchi, Jharkhand, Sep 2023.
- 2) Paper presented on the topic "Antioxidant and physiological study of *Vigna radiata* (mung beans) plants under salt stress condition", in the International Conference on Environment, Forestry and Sustainable Agriculture, organized by Department of Botany, St. Xavier's College, Ranchi, Jharkhand, Nov 2022.

Name of the Faculty- Dr. Santosh Kumar Kiro

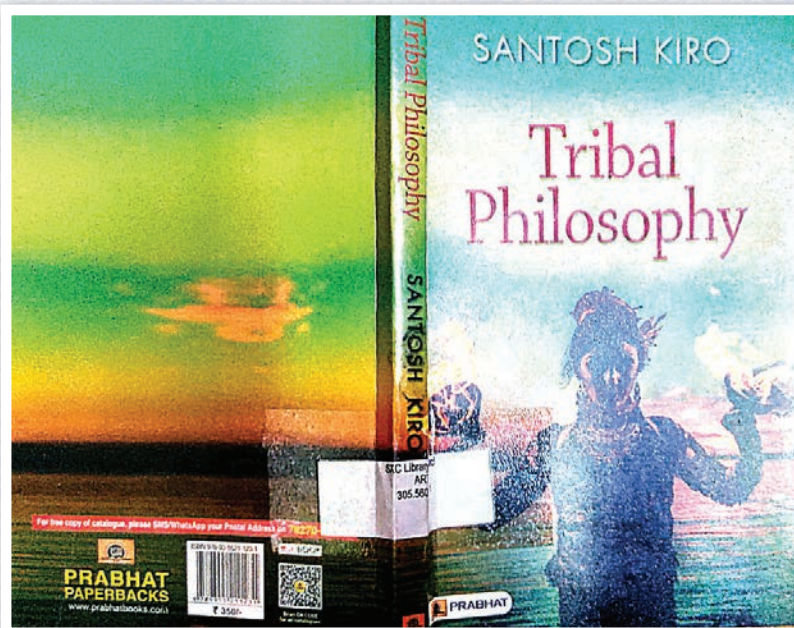
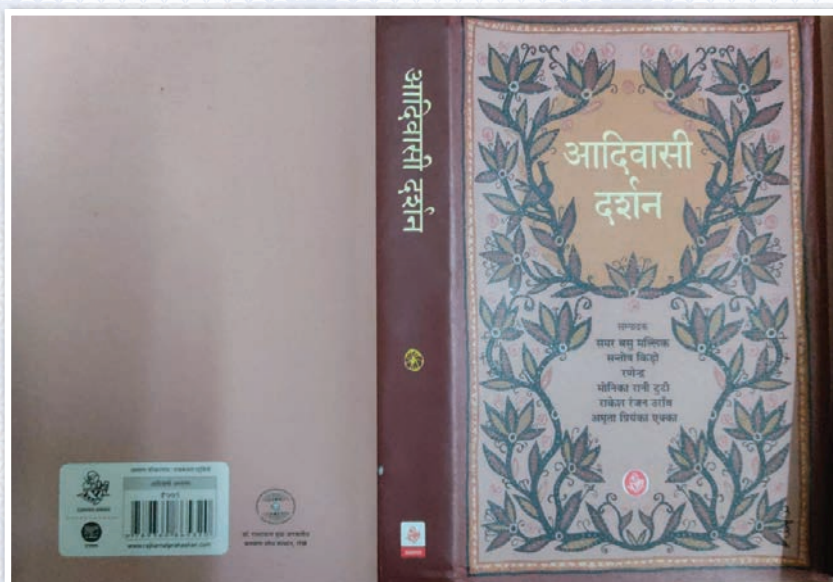
Department of Journalism & Mass Comm.

Email- santoshkumarkiro@gmail.com

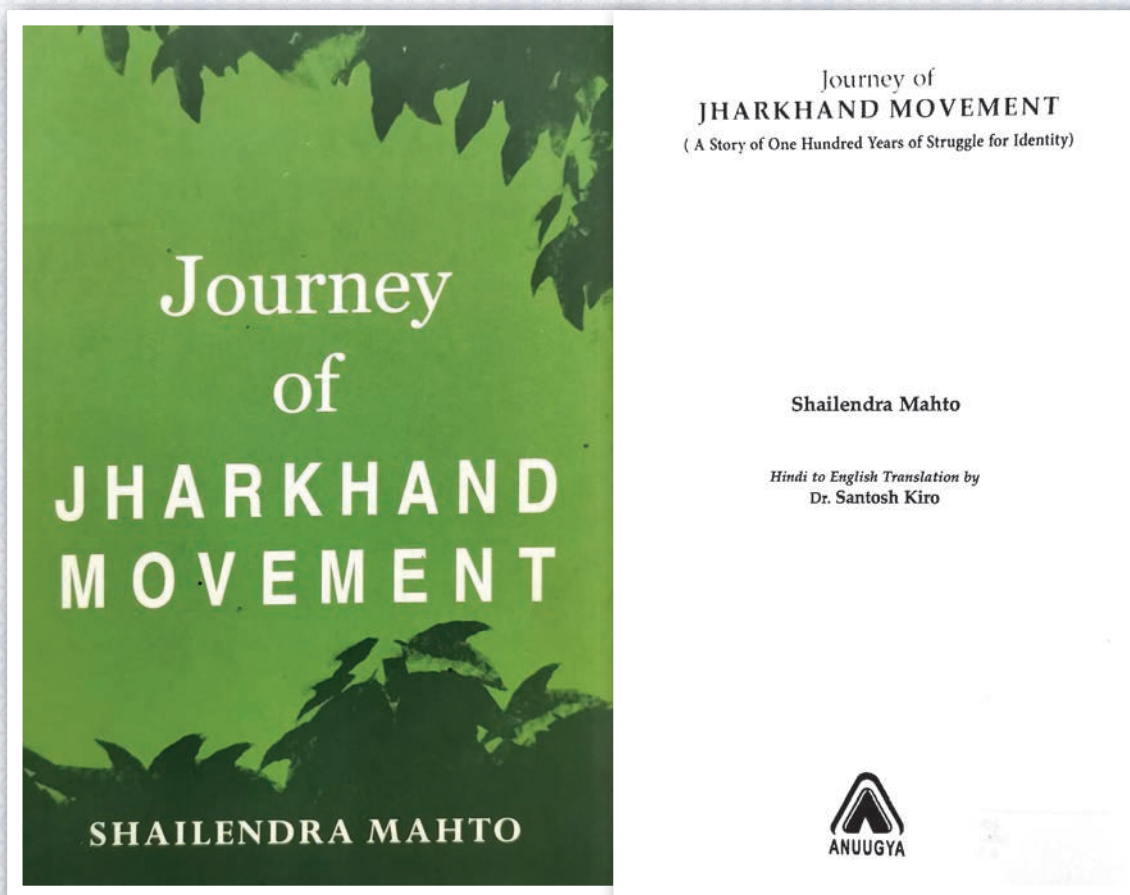


Books Authored:

- 1) “Philosophy of unseen Violence”, Publication in progress, 2024.
- 2) “Khunti: General Election 2024”, Publication in progress, 2024.
- 3) “Life & Work of Jaipal Singh Munda” (Govt. of Jharkhand), Tribal Research Institute, 2023.
- 4) Tribal Philosophy by Santosh Kiro, ISBN- 978-93-5521-123-1; Prabhat Paperbacks publication, New Delhi



Translated Book - Journey of Jharkhand Movement by Sailendra Mahto (Hindi to English translation by Santosh Kiro)- ISBN-978-93-89341-86-7, Anugrah Books, Delhi



Seminar/Conference attended/Paper Presented (National/International):

- 1) Attended as a Resource Person in the Conference on “Tribal Culture & Ecological Conservation” By Indira Gandhi National Centre for Arts, Regional Centre, Ranchi, 19 March 2023.
- 2) Attended Conference on “Narrative on the Hills & Forest People of India”, By Indira Gandhi National Centre for Arts, Regional Centre, Ranchi, 7 February 2023.
- 3) Attended Conference on “Communication for Social & Behavioural Change”, by UNICEF & Lady Irwin College, New Delhi on 1-3 Nov, 2022



Name of the Faculty/Researcher - Dr. Neel Kusum Kullu

Department of Journalism & Mass Comm

Email- nkullu@gmail.com

ORCID ID-0000-0002-2136-4837

- Total Number of Research papers published- 1
- Total Number of Research Papers Presented in Seminar/Conference- 1

Research article - 01

Dr. Neel Kusum Kullu ; LIGHTS CAMERA AND SUSTAINABILITY: REVIEWING SUSTAINABLE AGRICULTURE IN ECO-DOCUMENTARIES; Communication Today, Volume 27, no.3, pages 130-138, July-September, 2023, ISSN 0975-217X

LIGHTS CAMERA AND SUSTAINABILITY: REVIEWING SUSTAINABLE AGRICULTURE IN ECO-DOCUMENTARIES

Dr. Neel Kusum Kullu

Department of Department of Journalism & Mass Comm., St. Xavier's College Ranchi, Jharkhand, India

Abstract

How we communicate about sustainable living shapes our response to the most complex and challenging environmental concerns the society currently faces. This paper conducts a discourse analysis and criticism of sustainability ideology in two documentary films: Eco-village and Jharia, both directed by renowned film activists. It is argued that these films place their discussions of sustainable agricultural practices into a narrative framework. This paper demonstrates how the stories we consume about sustainable living as we entertain ourselves may affect our perceptions of the world and our ability to work together to build a sustainable future. The study explains how the documentary films can encourage sustainable agriculture in rural areas through depiction of common characters who are actively taking steps to reach this goal. The documentaries weave together the stories of people who generously come forward to save the community from different socio-economic problems.

Keywords- *agriculture, eco-documentaries, film, rural areas, sustainable*

Research article-02

Dr. Neel Kusum Kullu Negotiating the Broadcast of Tribal Language Programmes in Radio Channels of Ranchi; Communication Today, Volume 28, No. 1-2, pages 90-102, January-June, 2024, ISSN 0975-217X

LIGHTS CAMERA AND SUSTAINABILITY: REVIEWING SUSTAINABLE AGRICULTURE IN ECO-DOCUMENTARIES

Dr. Neel Kusum Kullu

Department of Journalism & Mass Comm, St. Xavier's College Ranchi, Jharkhand, India

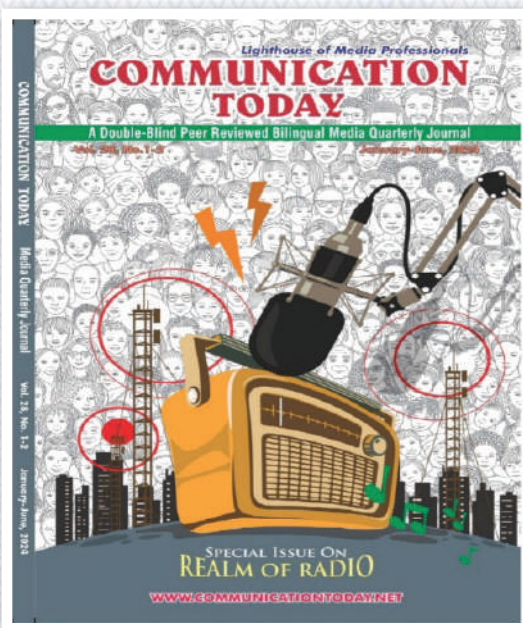
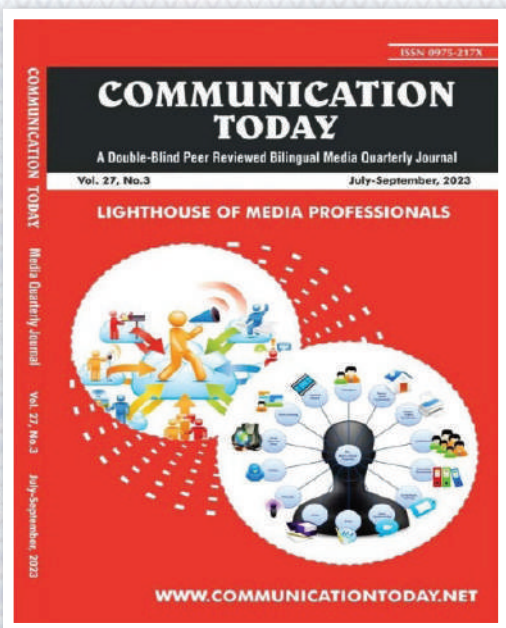
Abstract

Radio broadcasting has immense potential as a medium of development for rural, marginalized communities and to empower them with confidence and knowledge. This paper presents a research on the role of radio as a unique medium and a source of information for tribal communities of Jharkhand. The research is to draw the consideration of radio channels of Ranchi towards the diminishing pace of tribal languages in the state. It examines the strategies for radio broadcast of tribal languages programmes to promote tribal culture in the city. This paper draws on interview data conducted in Ranchi from different radio channels and tribal language experts. Further analysis of interviews allowed us to successfully develop a report on different formats of radio programmes to be designed keeping in mind the tribal listeners. In order to promote tribal languages of Jharkhand, different formats of radio such as songs, news, feature, talk shows etc. can be broadcasted in tribal dialects.

Keywords: Radio programmes, tribal listener, tribal language broadcast, language empowerment.

Book Published: Communication Today, Volume 28, No. 1-2, pages 90-102, January-June, 2024, ISSN 0975-217X.

Book Published: Communication Today, Volume 27, no.3, pages 130-138, July-September, 2023, ISSN 0975-217X

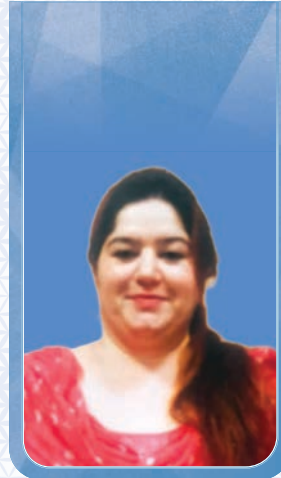


Conference/Seminar- 5

- 1) Participated in the Workshop on “Basic Data Analysis using SPSS”, organized by Department of Animal Genetics and Breeding, College of Veterinary Science and Animal Husbandry, BAU, Ranchi, during 18th-20th July 2023.
- 3) Participated in the workshop on “Research and Skill Development: NEP 2020”, organized by Amity University, Ranchi from 11th-17th July 2022.

Name of the Faculty/Researcher- **Nidhi Arya**

Department of Vocational and Management Studies



Research article-01

A review on Digital Entrepreneurship platforms: India looking towards a holistic approach, Manthan, ISSN: 2582-8517, Volume 2, issue 1, SBU journals of Commerce, Management and Humanities November 2022.

Abstract

The world is moving towards digitalization and India is following the global trends quite diligently. As a country, within India, we have both 'India' and 'Bharat' where it will not be wrong to say that India dominates in terms of its population. India signifies the rural India, which, population-wise dominates the rest of India and because of its size attracts both Indian and the global marketers. Entrepreneurship is widely advocated as a driver of innovation and economic growth. Given today's technological and digital challenges, digital entrepreneurship in particular is a phenomenon on the rise, both through the digitization of existing businesses and the creation of digital enterprises. Digital entrepreneurship have been focus in terms of their purpose and readership. To address the gap, this review aims to map on digital entrepreneurship in order to facilitate a better understanding of antecedents and future work. The content and thematic analysis of various articles allows us to identify five approaches:

- i) Digital Entrepreneurship Success Factors,
- ii) Digital Entrepreneurial Ecosystems and Smart Cities,
- iii) Digital Entrepreneurial Models,
- iv) Sharing Entrepreneurial Platforms, and
- v) Digital Platforms about Entrepreneurship Co-creation.

Our findings further highlight the various gaps in digital entrepreneurship literature and raise some research questions that warrant future academic research. Our holistic model holds several implications for the theory and practice of the different aspects of digital entrepreneurship.

Keywords: *Digital entrepreneurship, Success factor, Digital entrepreneurial ecosystem, Digital entrepreneurial models, Digital entrepreneurial co-creation, Sharing digital entrepreneurial.*

Research article-02

Menstrual Hygiene Education In Ranchi, India: Current Condition And Further Direction, Khushi Kumari, Khushi Kumari, Nidhi Arya, Deependra Kumar Sinha, IOSR Journal Of Humanities And Social Science (IOSR-JHSS), Volume 30, Issue 4, Series 9 (April, 2025) 01-07.

Abstract

Menstrual hygiene management (MHM) is a crucial component of women's health, particularly in India, where menstruation is still shrouded in silence and stigma. Ranchi, the capital of Jharkhand, reflects many of the national challenges in managing menstruation with dignity and safety. In recent years, awareness around menstrual health has increased, but education and resources remain limited, especially for women in rural and low-income communities. This article explores the current state of menstrual hygiene education in Ranchi, the barriers to progress, and strategies for future improvements.

Keywords: *menstrual hygiene management, women's health, social stigma, menstruation.*

Name of the Faculty - Hussain Ahmed

Department of Commerce Vocational & Management Studies

Email- hussainrch834@gmail.com



- Total Number of Research papers published- 1

Research article-01-

Hussain Ahmed, Ekta Arya, Rakesh Kumar Dixit; IMPACT OF USD VOLATILITY ON FOREIGN TRADE INVOICING IN INDIA; MANTHAN-SBU JOURNAL OF COMMERCE, MANAGEMENT & HUMANITIES, Vol 3 [Jul-Dec, 2022]; ISSN No:- 2582-8517 ; Page no 177-185

IMPACT OF USD VOLATILITY ON FOREIGN TRADE INVOICING IN INDIA

Hussain Ahmed, Ekta Arya, Rakesh Kumar Dixit

Department of Commerce Vocational &

Management Studies, St. Xavier's College Ranchi, Jharkhand, India

Abstract

The study discusses the casual evidence on the linkage between foreign currency volatility and international trade invoicing and its impact on Indian economy. The study specially considers the impact of US dollar - INR conversion volatility. Because most of the trade invoicing is done in term of USD in India. This exploits an unexpected financial risk to the foreign trade around the forex market volatility. By using the different types of risk associated with the forex volatility, The study also tries to test the impact of foreign currency volatility on export import invoicing and its impact on Indian economy by using transactional data. There are various types of risk which are aroused due to the volatile forex value. Such as Currency exchange risk and liquidity risk. By analysing the available data and facts considering these risks, the current study concludes with the following facts: The foreign currency volatility affects both import as well as export invoicing, it affects the pricing of import and export goods and services which increase inflation, it affects not only the cash flow of foreign currency but also affect the cash flow in terms of Indian rupees, Finally, the domestic economy is drastically disturbed by the volatility of foreign currency values.

Keywords - Currency, Volatility, Invoicing, Impact

Conference/Seminar- 1

National conference on “Emerging Trends in innovation and sustainable Business Practices” organized by Sarla Birla University from 13th -14th October 2022.

Name of the Faculty - Ekta Arya

Department of Commerce Vocational & Management Studies

Email -

- Total Number of Research papers published- 1



Research article-01-

Hussain Ahmed, Ekta Arya, Rakesh Kumar Dixit; IMPACT OF USD VOLATILITY ON FOREIGN TRADE INVOICING IN INDIA; MANTHAN-SBU JOURNAL OF COMMERCE, MANAGEMENT & HUMANITIES, Vol 3 [Jul-Dec, 2022]; ISSN No:- 2582-8517 ; Page no 177-185

IMPACT OF USD VOLATILITY ON FOREIGN TRADE INVOICING IN INDIA

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Abstract

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Keywords- *Currency, Volatility, Invoicing, Impact*

Name of the Faculty - Rakesh Kumar Dixit

Department of Commerce Vocational & Management Studies

Email-

- Total Number of Research papers published- 1



Research article-01-

Hussain Ahmed, Ekta Arya, Rakesh Kumar Dixit; IMPACT OF USD VOLATILITY ON FOREIGN TRADE INVOICING IN INDIA; MANTHAN-SBU JOURNAL OF COMMERCE, MANAGEMENT & HUMANITIES, Vol 3 [Jul-Dec, 2022]; ISSN No:- 2582-8517 ; Page no 177-185

IMPACT OF USD VOLATILITY ON FOREIGN TRADE INVOICING IN INDIA

Hussain Ahmed, Ekta Arya, Rakesh Kumar Dixit

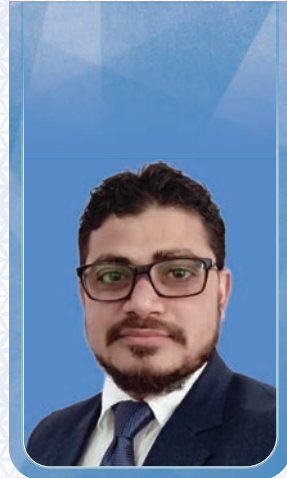
Department of Commerce Vocational & Management Studies,

St. Xavier's College Ranchi, Jharkhand, India

Abstract

The study discusses the casual evidence on the linkage between foreign currency volatility and international trade invoicing and its impact on Indian economy. The study specially considers the impact of US dollar - INR conversion volatility. Because most of the trade invoicing is done in term of USD in India. This exploits an unexpected financial risk to the foreign trade around the forex market volatility. By using the different types of risk associated with the forex volatility, The study also tries to test the impact of foreign currency volatility on export import invoicing and its impact on Indian economy by using transactional data. There are various types of risk which are aroused due to the volatile forex value. Such as Currency exchange risk and liquidity risk. By analysing the available data and facts considering these risks, the current study concludes with the following facts: The foreign currency volatility affects both import as well as export invoicing, it affects the pricing of import and export goods and services which increase inflation, it affects not only the cash flow of foreign currency but also affect the cash flow in terms of Indian rupees, Finally, the domestic economy is drastically disturbed by the volatility of foreign currency values.

Keywords- *Currency, Volatility, Invoicing, Impact*



Name of the Faculty/Researcher- Dr. Shakil Anwar Siddique

Department of vocational and management studies

RESEARCHER ID

Web of Science: 8711-2023

Orchid: 0000-0002-3569-9662

Research Gate: <https://www.researchgate.net/profile/Shakil-Siddique-2>

Google Scholar: <https://scholar.google.com/citations?user=SQxBIqQAAAAJ&hl=en>

Email: shakilsiddique@sxcran.org

- Total Number of Research papers published- 7
- Total Number of Research Papers Presented in Seminar/Conference- 2

REVIEWER IN INDEXED JOURNAL

- Reviewer in International Journal of Innovative Research in Technology from 12th May 2023 till present.
- Reviewer in ABCD Indexed Journal 12th July 2023 till present.

Research & Publications

1. A Study on the Need & Benefits of Vocational Programmes at Undergraduate Level - Bridging Gap Between Students and Workplace - Students Perspective, Journal of Xidian, Vol. 19, Issue 3, ISSN: 1001-2400, UGC Care Group II, Scopus, March 2025

Abstract

In the present era the students want to earn just after the completion of their basic education, so there is a much need of professional courses that helps the students to attain this goal. Students who receive vocational education gain practical, useful skills that they can apply immediately upon graduation and throughout their program.

Through vocational education schools and programmes, there are numerous industry and career opportunities available. The National Centre for Educational Statistics reports that the various sectors/ domain like finance, marketing, retail, banking, insurance, office administration, construction, and consumer services are the most sought-after professions.

Strong job markets and professional development, a wide range of possibilities for vocational programmes/ courses, and investment value are the three primary categories of the advantages of a vocational education. With the equipped knowledge in the required field the student can get placed just after the completion of undergraduate programme. The course curriculum of vocational programme is designed in such a way that it acts as a bridge between the student and the industry.

This paper tries to led focus on the need and benefit of professional/vocational programmes that really helps the students in getting the job also a hand on experience that helps them in the workplace.

Keywords : Vocational, Opportunities, Job Oriented

2. **Impact of social media marketing in consumer buying behavior with reference to Ranchi, Organizational Development Journal, Vol. 13, Issue: 1, January 2025, pp. 95-103, UGC Care Group II Journal, ISSN: 0889-6402, DOI: 20.18001.OD.2025.V13I1.25.21855**

Abstract

The present paper seeks to analyze buying behavior of consumers, especially students, towards social media marketing, in the select area of Ranchi, Jharkhand, India. This paper aims to scientifically investigate the function of social media in consumer decision-making. A quantitative study explores the extent to which social media use affects experiences. Outsiders are currently increasingly dominating consumer opinions of goods and services in developed spaces, which affects judgments made in the detached space. Customers are more engaged with online social networking since advertisers have no control over the content, timing, or frequency of customer conversations. The findings indicate that consumer satisfaction is influenced by social media use during the information search and alternative evaluation phases, with satisfaction, increasing as the consumer advances through the process toward the final purchase decision and post-purchase review. The convenience sampling method is adopted for the study. The data is mostly collected from under-graduation students. A well-structured questionnaire was used to get information from the respondents, besides the secondary sources of information being referred to. The study was conducted during the year 2024.

Keywords: *Social Media Marketing, Marketing, Consumer, Consumer Buying Behavior*

3. **Understanding the customer preference and adoption of electric vehicles over the other with reference to Ranchi, Organizational Development Journal, Vol. 12, Issue: 3, 2024, pp. 73-80, UGC Care Group II Journal, ISSN: 0889-6402, DOI: 20.18001.OD.2024.C12I3.24.21654**

Abstract

Electric vehicles (EVs), with their very low or no Co2 –emissions, low noise levels, high efficiency and flexibility in grid operation and integration, are the key to achieving a sustainable transport sector in the future. Promising technology. This paper provides an overview of customer preference of electric vehicle adoption over the others. Understanding the customer preference and adoption of electric vehicles involves several factors like environmental concern, cost saving, technological advancement, government policies, infrastructure, innovation and brand perception.

Understanding and addressing these factors can the policy maker, manufacture and marketers to encourage the adoption of electric vehicles by meeting consumer and overcoming barriers to their updates.

Additionally, charging standards and mechanisms and the relative impact of vehicle charging on the grid are presented.

Keywords: *electric vehicles, adoption, customer preference.*

4. **Study on the Impact of Retail Service on Retail Sales with reference to Ranchi, Journal of Emerging Technology and Innovative Research (JETIR), Vol:10, Issue:8, August 2023, pp: c517-c522, ISSN: 2349-5162, UGC SN: 63975, DOI: 10.6084/m9.jetir.JETIR2308260**

Abstract

Retailing is the collection of actions that promote items or services to end users for personal or household consumption. Retailing conducts business by coordinating the availability of items and services on a big scale and offering them to clients on a local scale. Retail service is a set of activities aimed at increasing customer satisfaction, or the feeling that a product or service has exceeded the client's expectations. Its significance varies depending on the product, industry, and client; for example, damaged or broken items

can be swapped. This study was conducted to determine the relationship between retail customer service and retail outlet sales.

The goal is to evaluate the various retail services provided by Ranchi shops. The study also seeks to determine consumer satisfaction levels with regard to retail services, as well as the influence of retail services on sales. Finally, there are suggestions for improving retail value-added services for customers.

Keywords: Retail, Retailing, Retail Service, Customer Satisfaction

- 5. Study On The Impact Of Covid-19 The Pandemic On The Working Culture Of A Banker With Reference To Ranchi, International Journal of Research Publication and Reviews (IJRPR), Vol.: 4, Issue:8, August 2023, pp. 650-655, ISSN: 2582-7421**

Abstract

This research paper is being prepared on the life of bankers working culture to find out whether the working culture of our bankers is being affected after covid with the help of research on their past working culture, in time of pandemic and after the pandemic working time and the research on them not only considers for this only but with this, we can also get to know about the work pressure and their job security is in risk or they are well managing their job and also to know anyhow their job is affecting their personal life this paper will contain briefing on bankers life and a small summary on their lifestyle because all the employee were affected in the pandemic and the bankers were the one who was the backbone of each financial activity.

The analysis is also being made with the help of data which is being collected from our respectful bankers this helped us to showcase the findings and find out better analysis made on them and from this, only our research paper was possible to make hope you all like it

Keywords: Work Culture, Bankers, Pandemic.

- 6. An Empirical Study on the Significance of Marketing and Sustainable Planning in a Business Organization Growth, Manthan, Sarala Birla University, Journal of Commerce Management & Humanities, Vol. 2, July 2022, Page No.- 19-23, ISSN: 2582-8517**

Abstract

Every marketing operation constitutes of planning and its implementation system. Planning is considered the static part, whereas implementation is considered as the variable part of the marketing operation. As planning is considered the static part of marketing it should be developed with great care and considered a fool proof strategy for making it sustainable. Some organization also considered on double planning for sustainability, it's called Plan-B. If at any stage its find that Plan – A, receiving certain jerk or suddenly certain resource chains are breaks down due to internal or external factors then immediately planning B will be considered for continues implementation process. In this regard it should study the resources required at every stage of implementation. Generally, in long term planning, sustainability is one of the most crucial factors, but in short-term planning it is also very important.

Sustainability is very important for make flexibility in planning. We should have to make each and every planning with proper flexibility, otherwise too much reconsideration or re-planning jeopardized the planning.

The marketing planning process is designed to influence organizational performance and achieve the desired business growth. This impact is achieved through the adoption of a focused approach aimed at achieving specific marketing activities. This facilitates alignment of the organization's their internal capabilities of facilitate effective implementation. The present study examined the relationship between

effective marketing plans and its impact on business performance. The results showed that effective and strategic marketing plans were stronger and more positively related to the organization's overall financial performance and its business growth. This study also compared the association between marketing plans and market-oriented variables with key performance indicators. The results showed that the variables were related to an organization's overall financial performance and its business growth with about equal magnitude.

Keywords: *Marketing planning, Organizational Performance, Business Growth*

7. **A Study on The Role of Digital Marketing on Students Perception Towards e-learning and the Impact on Their Career, International Research Journal of Management Science & Technology, Impact Factor 8.10, Vol. 13, Issue 2, pp.70-76, UGC – 47959, doi.org/10.32804/IRJMST, 2022**

Abstract

The influence of digital media and marketing practices in the field of e-learning platforms has seen an immense rise during the lockdown in the past couple of years. This study evaluates and unravels the deeper impact it has created in the psychological change in the attitude of students and budding professionals. The learning being cost-effective, flexible, fast and enjoying an on unprecedented global reach internet marketing has brought different education techniques businesses to incredible gains. The virality of e-learning platforms is partially driven by psychological arousal. The promotional techniques can easily convince the behavioural aspects of students regarding their products, i.e., if the students can access the services efficiently then it may lead to become more successful. The instability of moods and feelings while decision making results in forming attitude.

This perceived usefulness (PU) of e-learning is also identified as a contributory factor for a more comprehensive view of customer behaviour, predictive analytics, and deeper insights. The different tools and techniques of digital marketing like Google AdWords, SNS, SMO, SEO etc. and student's social presence has helped educational institutions find them and with the use of practical models might result in better engagement of marketing academics with business, leading to greater relevance in teaching and employability of marketing graduates. The results of the present study confirmed that digital marketing communication is capable of even triggering need recognition in high involvement product category. Although some results also established that consumers feel positive towards digital communication, get affected from other customers' reviews and express their post-purchase feeling feelings over digital platforms, this does not entirely guarantee their learning and growth rates of becoming a successful professional as portrayed by the brand image.

Keywords: *E-Learning, Digital Marketing, Students*

Conferences, Seminars, Workshops & FDP

1. 5 Day National Level FDP on AI Powered Research Excellence organized by De Paul College, Mysore in association with Xavier Board of Higher Education from 21th July 2025 to 25th July 2025
2. 5 Day International Virtual FDP on Harnessing Generative AI: Smart Tools for Teaching, Learning, Evaluation and Research organized by St. Joseph's College, Tamil Nadu from 7th July 2025 to 11th July 2025.
3. Three day's Faculty Development Program on Quality Research Paper Writing and Publishing in High Impact Journal Organized by Udaan Education Service, From 27th July 2023 to 29th July 2023.
4. On 14th December 2022, National Workshop on Writing a Research Proposal in Social Science and Humanities organized and conducted by School of Social Science and Management, Dr. B. R Ambedkar University of Social Sciences, Madhya Pradesh – YouTube Live Session

5. An Empirical Study on the Significance of Marketing and Sustainable Planning in a Business Organization Growth, Sarala Birla University, National Conference on Emerging Trends in Innovation and Sustainable Business Practice. 2022
- 3) Webinar on AI Powered Presentation Tools organized by the department of Research & Publication, A2Z Edulearning Hub LLP on 19th August 2023.
- 4) Seminar on Vocational Training Organized by Rotary Club of Ranchi on 4th February 2023.
- 5) National Workshop on Writing a Research Proposal in Social Science and Humanities organized and conducted by School of Social Science and Management, Dr. B. R Ambedkar University of Social Sciences, Madhya Pradesh, on 14th December 2022.
- 6) National Conference conducted by Sarala Birla University on Emerging Trends in Innovation and Sustainable Business Practice, On 13th & 14th October 2022.
- 7) Seminar on Neurolingustic Programme in Collaboration with Kotak Mahindra Bank and Loyola Training Centre, On 11th November 2022.
- 8) Seminar on Bridging the Skills Gap Between Academia and the Finance Profession – The association of accountants and financial professional in business on 11th August 2022.
- 9) Three Day's International Workshop on Statistical Data Analysis using SPSS by the Department of Research & Publication, A2Z Edulearning Hub LLP, from 1st, 2nd & 3rd September 2023.
- 10) Seminar on Orientation Program for NAAC Accreditation & Documentation on 21st September 2023

Name of the Faculty/Researcher- Dr. Deependra Kumar Sinha

Department of vocational and management studies

Email- deepe9dea@gmail.com

ORCID ID- 0009-0004-3909-2800



- Total Number of Research papers published- 07
- Book Chapters- 02
- Book Published-01

Research article - 01

Social Entrepreneurship need and challenges, IOSR Journal of Business and Management (IOSR-JBM), Publication date: 24th June. 2022, e-ISSN: 2278-487X, p-ISSN: 2319-7668. Volume 24, Issue 6. Ser. IV (June. 2022), PP 01-05.

Abstract

These days social entrepreneurship is well known and most significant field in all help and public areas. Social innovation is about creating new social structures that allow issues of justice, education, environmental protection, sustainability and/or community development to be reframed so that new solutions can come forward. Social entrepreneurs are the engines of innovation. Social innovations are new strategies, concepts ideas and organizations that meet the social needs of different elements which can be from working conditions and education to community development and health. Social innovation and social entrepreneurship may work through a variety of organizational architectures to enable change.

Keywords: *Social Entrepreneurship, innovative function, Environmental Issue, Social Issue, Financial Issue*

Research article - 02

A review on Digital Entrepreneurship platforms: India looking towards a holistic approach, Manthan, ISSN: 2582-8517, Volume 2, issue 1, SBU journals of Commerce, Management and Humanities November 2022.

Abstract

The world is moving towards digitalization and India is following the global trends quite diligently. As a country, within India, we have both 'India' and 'Bharat' where it will not be wrong to say that India dominates in terms of its population. India signifies the rural India, which, population-wise dominates the rest of India and because of its size attracts both Indian and the global marketers. Entrepreneurship is widely advocated as a driver of innovation and economic growth. Given today's technological and digital challenges, digital entrepreneurship in particular is a phenomenon on the rise, both through the digitization of existing businesses and the creation of digital enterprises. Digital entrepreneurship have been focus in terms of their purpose and readership. To address the gap, this review aims to map on digital entrepreneurship in order to facilitate a better understanding of antecedents and future work. The content and thematic analysis of various articles allows us to identify five approaches: Digital Entrepreneurship Success Factors,

- i) Digital Entrepreneurial Ecosystems and Smart Cities,
- ii) Digital Entrepreneurial Models,

- iii) Sharing Entrepreneurial Platforms, and
- iv) Digital Platforms about Entrepreneurship Co-creation.

Our findings further highlight the various gaps in digital entrepreneurship literature and raise some research questions that warrant future academic research. Our holistic model holds several implications for the theory and practice of the different aspects of digital entrepreneurship.

Keywords: *Digital entrepreneurship, Success factor, Digital entrepreneurial ecosystem, Digital entrepreneurial models, Digital entrepreneurial co-creation, Sharing digital entrepreneurial.*

Research article - 03

Geopolymer: A recent trend on non-ferrous industrial waste material for building construction, Sustainable Lifestyle approaches towards Environment and Climate Change, EIACP (PC-RP) Special Issue, 2023. ISSN - 0972 - 4656 MINENVIS Monograph.

Abstract

We know that, in case of cement production equal amount of carbon-di-oxide (CO₂) was produced which causes some special type of environmental problems, like global warming, acid rain etc. apart from this every industrial activity required energy which comes from burning of fossil fuels like coal. Burning of coal causes or produces huge amount of carbon di oxide (CO₂) which again causes dis-balance in environmental activities. Ranchi is a core industrial city; it means that chance of pollution increases day by day in this city. In Ranchi major industry product is iron based materials. So major pollutants are the byproducts of iron industry like AOD slag, GBF slag, ETP sludge, fly ash and bottom ash. Hence, due to growing environmental concerns of the iron industry, there is a need to develop alternative materials to reduce pollution of fly ash, bottom ash, granulated blast furnace slag (GBFS), AOD slag & ETP sludge. Also there is a need to develop masonry units using these alternative materials for sustainability. This paper investigates the behavior of AOD and GBFS based geopolymer product. The composition of AOD and GBFS were fixed in mixture and only the percentage composition of fly ash and slime in the mixture were varied. The ratio of sodium hydroxide and sodium silicate 1:3 act as an activator solution were used for polymerization process. The samples were cured initially at 50 oC for 24 hrs and after 24 hours these samples were kept at normal temperature 35 ± 5 oC for 28 Days. The reaction products in different experimental conditions were characterized using Scanning electron microscope (SEM), X-Ray diffraction (XRD) and Fourier transmission of Infrared spectroscopy (FTIR) and automatic compressive test machine. The results of compressive strength of geopolymer products prepared at 35 ± 5 oC were in the range of 4 to 12 MPa. This result indicates for application in low strength geopolymer building block at room temperature. Rapid growth of country depends on the industrialization process and after industrialization improved growth rate and living standard of the population. Combined effect of industrialization and rapid rate of growth results into generation of huge amount of waste which degrades the local environment. In today's world one of the essential requirement for growth is electricity. In INDIA about 70% of electricity is generated through thermal power plants, where coal is used to generate electricity and produce huge amount of fly ash (70 to 80%) and bottom ash (20 to 30%). The amount of fly ash generation in INDIA is around 200 million tons per year. The amount of fly ash generation in INDIA is around 200 million tons per year. Out of which approx. 45% of fly ash used for various application (like land filling) and remaining were disposed-off and this disposed waste can cause air pollution, water pollution, land pollution and allergic effect. Geopolymer is one of such process which has the potential to convert fly ash into value added products for civil engineering application and simultaneously support good and healthy environment to support mission life.

Keywords: *Fly Ash, Slime, GBFS, AOD Slag, Geo-polymerization, Compressive Strength*

Research article - 04

Enhancing Women's Financial Inclusion Through Digital Banking, IOSR Journal of Humanities and Social Science (IOSR-JHSS) Volume 29, Issue 9, Series 12 (September, 2024) 43-49.

Abstract

The increasing adoption of digital banking has the potential to significantly enhance women's financial income by providing easier access to financial services, facilitating faster transactions, and opening new avenues for income generation. However, understanding how digital banking is utilized by women, the challenges they face, and the benefits they perceive remains underexplored. This research aims to investigate the role of digital banking in enhancing women's financial income, specifically focusing on usage patterns, barriers to adoption, and the perceived benefits. A descriptive research design was employed, using a structured questionnaire distributed to a diverse sample of women across different demographics, including age, education, employment status, and location. The findings indicate that while many women use digital banking services, significant barriers such as lack of knowledge, technical issues, and security concerns hinder broader adoption and effective use. Moreover, the study reveals that digital banking offers various benefits, including better financial management, increased convenience, and new income opportunities. Based on these findings, the study provides actionable recommendations for financial institutions, policymakers, and community organizations to enhance digital banking services and support women's financial empowerment.

Keyword: *Financial Literacy, Gender Equality, Digital Banking, Financial Inclusion, Digital Payment*

Research article - 05

Microstructure Analysis of TMT Rebar, Industrial Engineering Journal, ISSN: 0970-2555, Volume : 53, Issue 12, No.3, December : 2024 page No. 38 – 42.

Abstract

The present work aims to study the evaluation of the microstructure of the various types of rebars. The microstructures of all rebar samples comprise an outer tempered martensite ring with an inner core of ferrite-pearlite in between a narrow bainitic transition zone. Maximum hardness is achieved at the periphery which gradually decreases towards the center.

Keywords: *TMT, microstructure, bainitic, martensite*

Research article -06

Menstrual Hygiene Education In Ranchi, India: Current Condition And Further Direction, Khushi Kumari, Khushi Kumari, Nidhi Arya, Deependra Kumar Sinha, IOSR Journal Of Humanities And Social Science (IOSR-JHSS), Volume 30, Issue 4, Series 9 (April, 2025) 01-07, e-ISSN: 2279-0837, p-ISSN: 2279-0845.

Abstract

Menstrual hygiene management (MHM) is a crucial component of women's health, particularly in India, where menstruation is still shrouded in silence and stigma. Ranchi, the capital of Jharkhand, reflects many of the national challenges in managing menstruation with dignity and safety. In recent years, awareness around menstrual health has increased, but education and resources remain limited, especially for women in rural and low-income communities. This article explores the current state of menstrual hygiene education in Ranchi, the barriers to progress, and strategies for future improvements.

Keywords: *menstrual hygiene management, women's health, social stigma, menstruation.*

Research article-07

The Future of Banking: How Fintech Innovations Are Reshaping Financial Services', Journal of Emerging Technologies and Innovative Research, Arikta Singh, Komal Kumari, Deependra Kumar Sinha, Rajveer Pathak, Volume 12, Issue 2, February-2025, eISSN: 2349-5162, h437-h450

Abstract

The rapid expansion of financial technology (fintech) has transformed traditional financial services, offering enhanced accessibility, convenience, and efficiency. This study explores the demographic characteristics, adoption patterns, and user perceptions of fintech, drawing insights from a diverse sample of 124 respondents. Key factors such as age, gender, location, education, and employment status significantly influence fintech adoption, with younger, urban, and tech-savvy individuals showing higher engagement. Findings reveal that while fintech innovations, including mobile banking apps and digital wallets, have positively impacted financial inclusion and accessibility, challenges such as technological barriers, trust issues, and data privacy concerns hinder widespread adoption. Despite these challenges, respondents recognize the cost-effectiveness and convenience of fintech solutions, with features like quick transactions and personalized services being most valued. However, skepticism toward AI-powered tools and concerns about security remain prominent barriers. The study underscores the need for localized strategies, improved infrastructure, and user-centric designs to address these barriers and foster trust. By leveraging emerging technologies like blockchain and focusing on equitable access, fintech providers can bridge existing gaps and empower underserved populations. This research highlights the transformative role of fintech in driving financial inclusion and calls for strategic efforts to ensure its benefits reach diverse demographics worldwide.

Book Chapter 01:

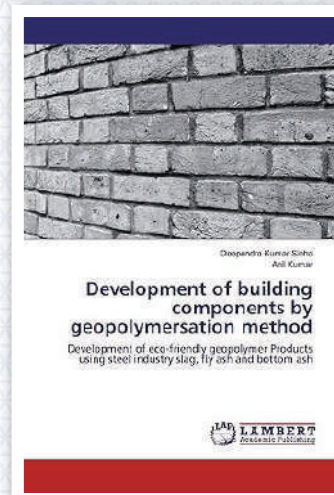
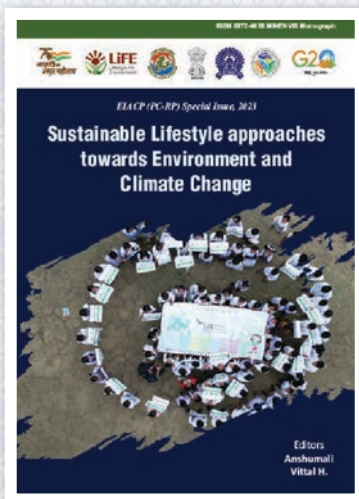
IIT (ISM) EPACP (PC-RP), Book Chapter in "Sustainable life style approaches towards Environment and Climate Change" Under the Topic Waste Management title "Geopolymer: A recent trends on non-ferrous industrial waste material for building Construction" page no 119- 128.

Book Chapter 02:

Durability properties of admixture of fly ash, bottom ash and GBFS, Springer Nature Switzerland AG; 1st ed. 2022 edition (18 June 2022); ISBN10:3030939359; ISBN-13:978-3030939359.

Book Published 01:

Development of building components by geopolymerisation method, "Development of ecofriendly geopolymer products using steel industry sludge, flyash and bottom ash." Lambert publication, ISBN-10 : 6202514809, ISBN-13 : 978-6202514804



Name of the Faculty/Researcher- Dr. Kamaldeep

Department of Computer science and IT

Email- kamaldeep@sxcran.org

ORCID ID- <https://orcid.org/0000-0002-3162-4356>



- Total Number of Research papers published- 07
- Book Published- 01

Research article - 01

“Performance evaluation of Systemetric Encryption Algorithm using MCDM methods”, 2022 IEEE 2nd International Symposium on Sustainable Energy, Signal Proceeding and Cyber Security (ISSSC), Gunupur, Odisha, India, pp 1-6, 2022.

Abstract

Data and information are found to be stored, processed or transferred with the support of modern technological tools and hardware specifications. Due to the increase in the usage of digital communication and higher dependency on the internet technology platform, the risk factor also increased. Thus, it is essential to use safety and precautionary measures while storing and transferring data in order to prevent unauthorized access. One of the way of achieving this is through confidentiality, which uses various encryption algorithms to convert a readable message (plain text) into unreadable form (cipher text). Cryptographic algorithms are of two types- symmetric encryption algorithms and asymmetric encryption algorithms. This paper focused on few symmetric encryption algorithms namely 3DES, AES, Blowfish and IDEA. The objective of this work is to evaluate the performance of these encryption algorithms on the basis of three criteria- time, resource and privacy. The evaluation is done using MCDM methods such as PROMETHEE II, COPRAS and ARAS, which determine the ranking of these encryption algorithms based on the score obtained. The simulation has been performed in C/C++ compiler and the result analysis shows that Blowfish algorithm is considered as the best symmetric encryption algorithm in comparison to the others for COPRAS and ARAS methods whereas, IDEA is the best ranked in PROMETHEE II method.

Keywords: AES, 3DES, Blowfish, IDEA, PROMETHEE II, COPRAS, ARAS

Citation: 2022 IEEE 2nd International Symposium on Sustainable Energy, Signal Processing and Cyber Security (iSSSC) | 978-1-6654-9056-6/22/\$31.00 ©2022 IEEE | DOI: 10.1109/iSSSC56467.2022.10051594

Research article - 02

“Dynamic Pricing Strategies of Product for Minimizing Booking Cancellation: Using Machine Learning Algorithm”, in 2024 IEEE International Women in Engineering (WIE) Conference on Electrical and Computer Engineering (WIECON-ECE), Chennai, India, 2024, pp. 460-465, doi: 10.1109/WIECON-ECE64149.2024.10914790.

Abstract

As already stated in the evaluation of challenges faced within the retail business and especially within winter wear brand, booking cancellations present certain challenges in the competitive environment proffered within the retail business. The goal of this study is to propose the dynamic pricing model with machine learning algorithms to minimize the rate of cancellation of bookings. This model makes the modification

of prices based on concerns such as historical booking pattern, customers' preferences and demands, seasonal trends, and competitor's prices. Decision Trees and Random Forest Regression machine learning models are used in an attempt to estimate the probability of cancellation occurrences and consequently the right prices are set to improve on bookings cancellation rate and revenue. Thus, the operational efficiency of the model is examined in terms of numerous trials and practical implementations and discussed certain impacts that the proposed model might have on financial performance of service providers. The revelations would therefore help force contend with dynamic price changes particularly through the use of predictive models to compel productivity enhancements and the resultant improvement in customer satisfaction within the context of a highly competitive retail industry.

Keywords: *Dynamic Pricing, Booking Cancellations, Machine Learning, Decision Trees, Random Forest Regression*

Citation: 2024 IEEE International Women in Engineering (WIE) Conference on Electrical and Computer Engineering (WIECON-ECE) | 979-8-3315-3547-6/24/\$31.00 ©2024 IEEE | DOI: 10.1109/WIECON-ECE64149.2024.1091479

Research article - 03

"Reservation Systems Cancellation Determination Using Machine Learning", 2024 IEEE First International Conference for Women in Computing (InCoWoCo), Pune, India, 2024, pp. 1-5.

Abstract

The increasing reliance on online reservation systems across various industries, including hospitality, airlines, and e-commerce, has heightened concerns over last-minute cancellations, may lead to monetary losses and ineffective operations. This study examines the application of machine learning techniques, particularly the Random Forest classifier (a bagging ensemble method), to predict reservation cancellations. In order to enable businesses to put proactive measures in place to reduce these risks, the research attempts to identify important variables that affect cancellations, such as customer demographics, booking lead times, and cancellation policies. The model was trained using 80% of the datasets, with the remaining 20% being utilized for testing. The model was assessed using key performance metrics such F1-Score, precision, recall, and accuracy. The model obtained a 0.37 F1-Score, recall of 0.38, precision of 0.37, and accuracy of 42%, indicating reasonable performance. The model's ROC-AUC score of 0.42 indicates that it has to be improved in order to better differentiate between canceled and non-canceled reservations. Overall, the findings show that Random Forest and other machine learning techniques, can be useful for predicting reservation cancellations, though further improvements are needed. Future research could concentrate on improving the model through hyper parameter tuning, feature engineering, and exploring more advanced methods to enhance predictive performance across different industries.

Keywords: *Reservation Cancellation Prediction, Machine Learning, Random Forest, Ensemble Methods, Customer Demographics, Booking Lead Time, Predictive Analytics, Operational Efficiency.*

Citation: 2024 First International Conference for Women in Computing (InCoWoCo) | 979-8-3315-1894-3/24/\$31.00 ©2024 IEEE | DOI: 10.1109/INCOWOCO64194.2024.10863607

Research article - 04

"Advanced Fault Sleuth System Architectures for Prognostic Anomaly Detection and Autonomous Irregularity Mitigation in Intelligent Power Networks"

Abstract

Revenue losses, inconsistent service, delayed problem detection, and electricity theft are just a few of the major issues that power distribution networks deal with. The suggested Fault Sleuth System makes use of Internet of Things (IoT) technologies to facilitate remote system control, automatic anomaly detection, and real-time electrical parameter monitoring. The technology guarantees accurate fault localization and proactive theft prevention by combining sophisticated data analytics and feature extraction techniques. The technology greatly lowers maintenance costs and security threats while improving operating efficiency through thorough data collecting, preprocessing, and intelligent analysis. In addition to improving problem detection and theft mitigation, this strategy also raises customer happiness, power quality, and service reliability. The study's conclusions show how the Fault Sleuth System can revolutionize the way that important power distribution issues are handled. This technology opens the door for a more robust, safe, and effective energy infrastructure that can satisfy needs in the future by leveraging real-time analytics and state-of-the-art IoT technologies.

Keywords: *Fault Sleuth System, IoT, real-time monitoring, anomaly detection, fault detection, theft prevention, power distribution, predictive analytics, operational efficiency, smart grids.*

Citation: 2025 IEEE 14th International Conference on Communication Systems and Network Technologies (CSNT), Bhopal, India, 2025, pp. 1281-1288, doi: 10.1109/CSNT64827.2025.10968068.

Research article - 05

Mitigating Security Vulnerabilities in Cloud-Based Home Automation through Advanced Edge Computing: A Comprehensive Framework for Privacy Enhancement and Data Protection

Abstract

With the soaring adoption of cloud-constructed home automation systems with CAGR of 8.5% from 2023 to 2030, security and privacy concerns have become critical considerations. This paper examines the security risks in cloud-based home automation systems and proposes leveraging edge computing to improve data security and privacy. We examine weaknesses including unapproved access, data leaks and highlight limitations of cloud-centric architectures. By integrating edge computing, we reduce data exposure, enable local processing, and improve control within the home environment. We explore how edge computing addresses specific attacks and offline operation during network disruptions. Challenges of incorporating edge computing into cloud-based home automation are discussed. This research contributes insights for achieving a more secure and privacy-enhanced home automation system.

Keywords: *Internet of Things, edge computing, home automation security, Data protection, Privacy, cloud computing.*

Citation: 2025 IEEE 14th International Conference on Communication Systems and Network Technologies (CSNT) | 979-8-3315-3193-5/25/\$31.00 ©2025 IEEE | DOI: 10.1109/CSNT64827.2025.10968051

Research article - 6

Predicting the Maximum Temperature at Two Meters Above Earth's Surface Using CNN-LSTM Attention Mechanism

Abstract

Climate monitoring, energy management, and agriculture are just a few of the sectors that depend on accurate temperature forecasts. By integrating a CNN and LSTM with an attention mechanism, this study seeks to develop a more precise temperature forecasting model. Using meteorological data gathered

from NASA's Prediction of Worldwide Energy Resources (POWER) platform, the suggested model is intended to forecast the maximum temperature at two meters above Earth's surface. Benchmarks for comparison are established time series forecasting models like ARIMA and FB Prophet. The attention mechanism helps the CNN-LSTM model better focus on significant time steps. CNN layers are used to capture spatial patterns in the data, and LSTM layers are used to characterize temporal dependencies. A number of metrics, including RMSE, MAE, RRSE, and R2, are used to assess the models' performance. As evidenced by the much reduced RMSE (1.61) and higher R2 (0.92), the CNN-LSTM with attention mechanism performs better than traditional models in temperature prediction, according to the results. As compared to conventional methods, the study finds that deep learning models—especially CNN-LSTM with attention—offer a more reliable and accurate method for predicting temperature. This suggests new directions for future research in real-time forecasting, model optimization, and the incorporation of other environmental variables.

Keywords: *temperature prediction, CNN-LSTM, attention mechanism, deep learning, time series forecasting, FB Prophet, ARIMA, meteorological data.*

Citation: 2024 International BIT Conference (BITCON) | 979-8-3315-1839-4/24/\$31.00 ©2024 IEEE | DOI: 10.1109/BITCON63716.2024.10984750

Research article - 7

A comparative study of fraud detection algorithm in food delivery systems

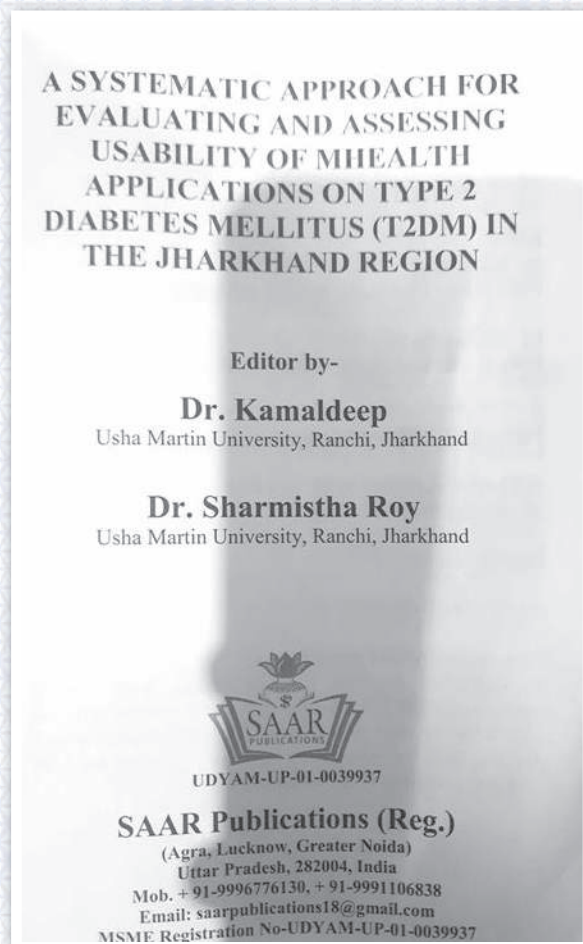
Abstract

Fraud is a considerable risk to food delivery systems, resulting in tremendous losses and damage to consumer confidence. The idea behind conducting this research is therefore to study the performance of logistic regression, decision tree and SVM in the detection of fraud in food delivery systems and compare them under various metrics. This training and testing is conducted using real transaction data provided by food delivery platforms. Those key performance indicators include confusion matrix, accuracy, precision, recall, and f1-score. An analytical comparison brought forth some merits and demerits of these algorithms while detecting different kinds of frauds, including 'fake' orders, identity theft, fraudulent refunds, and payment fraud. This has led us to further study the effect on the performance of the algorithms due to feature engineering and data imbalance. Such study's findings will guide one in selecting what the best fraud detection means would be expected to achieve in food delivery systems, to minimize financial loss and enhance customer experience. data imbalance on the algorithms' performance. The findings of this study provide valuable insights for selecting the most suitable fraud detection approach for food delivery systems, aiming to minimize financial losses and enhance customer experience.

Keywords: *Fraud detection, food delivery, machine learning, SVM, logistic regression, decision tree, performance comparison*

Citation: Tigga, S. L., Burman, R. K., Kumar, A., Kumar, N., Kumar, B., & Kamaldeep, K. (2025). A comparative study of fraud detection algorithm in food delivery systems. In Proceedings of the First International Conference on Advent Trends in Computational Intelligence and Communication Technologies (ICATCICT 2024) (Vol. 3327, Article 020005). AIP Publishing. Conference held on November 9, 2024, in Nashik, India. Published in AIP Conference Proceedings, July 31, 2025. <https://doi.org/10.1063/5.0289764>

Book Published- A Systematic Approach For Evaluating And Assessing Usability Of Mhealth Applications On Type 2 Diabetes Mellitus (T2dm) In The Jharkhand Region.



HIGHLIGHTS OF THE BOOK

Usability testing for a mHealth applications is a matter of concern. Numerous approaches for evaluating usability have been used in the past, but most of them are not integrated and do not cover all elements of usability specially for mHealth Apps. Usability testing is crucial for identifying the significant advantages of T2DM mobile health applications and assuring user satisfaction. Usability is a non-functional quality attribute that promotes user happiness while assisting in the swift and successful execution of task. This book sought to identify the most well liked T2DM focused mobile health applications by assessing their usability.

Publisher: SAAR Publications (UDYAM-UP-01-0039937) ISBN: 978-81-965955-7-9

Name of the Faculty/Researcher - Dr. Supriya Gupta

Department of Computer Science and IT

Email- supriyagupta000@gmail.com



- Total Number of Research papers published- 1

RESEARCH PAPER 1

Optimal trajectory path algorithm for wcv

Abstract:

In this paper, an optimal trajectory path algorithm for a WCV following YSGA and WOA is proposed focusing efficiency. WCV also known as wireless charging vehicle, are employed in WSN to minimize the energy loss and prolong the lifetime of the sensor nodes. Meta heuristic algorithms are particle swarm algorithms which chase the best search for the optimum point. YSGA is a meta heuristic algorithm technique devised to chase and block the target node. WOA also behaves identifying the specific target among the cluster. The simulation results of OTPA and proposed WCV are compared with existing prompt algorithms LEACH, R-LEACH, OCSA.

Keywords: *Optimal trajectory, Wireless Charging Vehicle, Yellow Saddle Goatfish Algorithm, Whale Optimization A, Meta heuristic Clustering.*

Name of the Faculty/Researcher- Dr. Rakesh Raja

Department of Computer Science & IT

Email- rajarakeshchauhan@gmail.com



- Total Number of Research papers published- 01

Thesis Title: Healthcare Data Analytics Using Machine Learning Approaches

Brief Description of Topic: The work aims to analyse healthcare data to get health related information to improve health services.

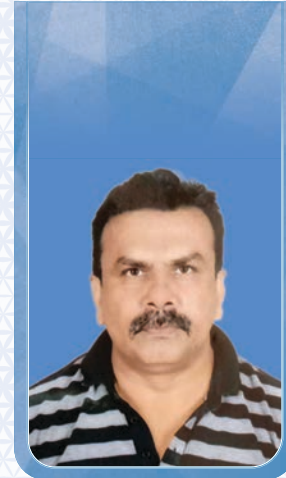
Aims and Objectives: Data has become an integral part of the digital world with the advancement in computing technologies. The collection of data is very crucial with regards to data analytics. The study of data with an intension to derive a conclusion (valuable insights), based on information is known as data analytics. Every industry makes use of data analytics ranging from financial to other commercial applications but it becomes even more important in healthcare domain for the analysis of healthcare data. The present thesis is mainly focused on classification problems of healthcare data based on machine learning algorithms. To resolve classification problems, several standard supervised machine learning algorithms are applied on healthcare data with the help of data mining techniques in order to better anticipate the outcomes of healthcare data.

PAPER PRESENTED- IN BIRLA INSTITUTE OF TECHNOLOGY

6 JUNE 2022- ON THE TOPIC OF HEALTHCARE DATA ANALYSIS USING MACHINE LEARNING APPROACHES

Shri Ritesh Kumar

Department of Computer Science & IT



Research Paper-01

Enhancing Stock Price Prediction with Deep Learning: A Privacy- Preserving Approach Using LSTM, GRU, & CNN Models

Dr. Narendra Sharma¹ Research Guide, Deptment of Computer Application, Sri Satya Sai University of Technology & Medical Sciences, Sehore, Bhopal-Indore Road, Madhya Pradesh, India.
Ritesh Kumar² Research Scholar, Deptment of Computer Application, Sri Satya Sai University of Technology & Medical Sciences, Sehore, Bhopal-Indore Road, Madhya Pradesh, India.

Abstract

Stock price prediction is crucial for informed investment decisions, yet traditional models struggle to capture market complexity. The methodology involves multiple steps, starting with the collection of historical stock prices. Then Data preprocessing techniques, such as Min-Max scaling, are applied to normalize the stock prices, which are then combined into a unified dataset. Differential privacy techniques, involving the introduction of Gaussian noise, are implemented to preserve data privacy. A sliding window approach is used to create input features for the training of various type of deep learning models, including the long short-term memory (LSTM) networks, gated recurrent units (GRU), convolutional neural networks (CNN), & bidirectional LSTMs. Each model is trained using the normalized data, & its performance is evaluated using metrics such as mean absolute error (MAE), mean squared error (MSE), & r2 score. The LSTM & GRU models showed the best performance, with LSTM achieving R2 scores of 0.9820 for Google (GOOGL) & 0.9705 for Apple (AAPL). This approach offers enhanced prediction accuracy while ensuring data privacy, providing valuable tools for investors & analysts.

Keywords: *Stock Price Prediction, Deep Learning Models, LSTM, GRU, Sentiment Analysis, VADER, Differential Privacy, Data Normalization, R2 Score, Bidirectional LSTM.*

Name of the Faculty/Researcher- Gurpreet Singh

Department of COMPUTER SCIENCE AND IT

Email- gurpreet@sxcraan.org



- Total Number of Research papers published- 2

Research article 01

Analysis of Modes of Data Security and Future Requirements for Cloud Based Storages

Gurpreet Singh^{*}, Ashoke kumar mahato²

1. Assistant professor, Department of Computer Science, St. Xavier's College, Ranchi.
2. Ex. H.O.D., Department of Mathematics and Ex. Dean of Science, D.S.P.M.U., Ranchi.

Abstract

Along with the advancements in technology, Cloud based storages are becoming a very popular method of data storage. With their growing popularity, concerns of security of data on cloud are also rising. At present, IaaS is the most commonly used deployment model of cloud computing. It requires capable enough encryption algorithms to safeguard the contents stored on cloud storages to prevent the malicious use of sensitive data.

Currently, identity based encryption (IBE), Data encryption standard (DES-256), Multi factor authentication (MFA) and Elliptic curve cryptography (ECC) are the most prominent methods used for securing data in cloud storages. In this paper, we are analyzing the working of these approaches and presenting a conclusion on the future. Our objective is to find the most efficient method to secure data in the cloud and further, we will enable the abilities and limits of these algorithms to meet the present requirements of data security.

Keywords: *Cloud computing, IBE, MFA, ECC, DES-256, IaaS*

An analysis of widely used data security systems in cloud based computing, scope and challenges

Gurpreet Singh¹, Ashoke kumar mahato²

1. Assistant professor, Department of Computer Science, St. Xavier's College, Ranchi.
2. Ex. H.O.D., Department of Mathematics and Ex. Dean of Science, D.S.P.M.U., Ranchi.

Abstract

Along with the growing convenience and ease of storage of data on cloud and its OTG access, securing it is one of the most considerable challenges of the modern era. Traditionally, data is stored on hard drives or pen drives or other such removable storage media. This becomes a risk in the hands of inexperienced people. Now-a-days, the risk is also increasing manifold due to a number of remote connections. With the number of cloud service offerings available in the modern era, it is important to ensure a holistic and effective approach to data protection. A number of security measures and techniques are currently available for the protection of cloud computing. Since cloud security has become a major concern for all parties involved in cloud computing, several popular biometric-based security systems are widely used to provide data security. A biometric security system is very hard to crack and are also difficult to fake.

With the advancements in technology and data storage on the cloud, there are a lot of research papers and methods and models being developed that focus on the data protection and improved level of security aspect of cloud data.

Later in 2002, Amazon web services started their SaaS based computing services. During this time, the growth in usage of cloud models like SaaS (and cooperation from both ends: client and host) improved significantly which resulted into SaaS gaining popularity. With this growth of the cloud, jobs in this particular area also grew rapidly due to the development of a large number of tools and services for web-based storage. Also, artificial intelligence and machine learning were major turning points that fueled this growth even further. Today, cloud computing and security in cloud systems are two of the most important things in the modern world.

The development of Cloud computing is categorized along with Grid and Distributed Computing.

Keywords: *SaaS, Biometric security, OTG access.*

PAPER PRESENTED 01

International Scientific Journal Of Engineering & Management Date – 4-5 May,

On Topic – Analysis of modes of data security and future requirements for cloud based storage

Paper presented 02

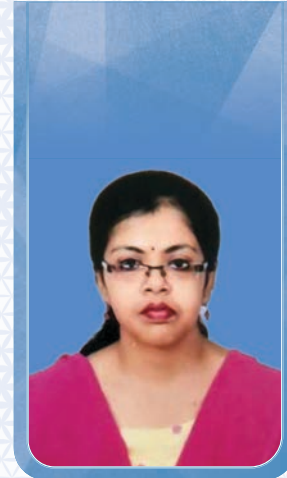
The Board of international Journal of Innovative Research in technology

Date – 12 – 13 August 23, 2025, On topic – Analysis of widely used data security system in cloud based computing and challenges

Name of the Faculty/Researcher- UDITA MITRA

Department of - English Language and Literature

Email- udit14@gmail.com



Book Chapter-

ISBN no.: 978-81-969366-6-2

Published by: HYPHEN PUBLICATIONS, Kolkata

Year: 2025

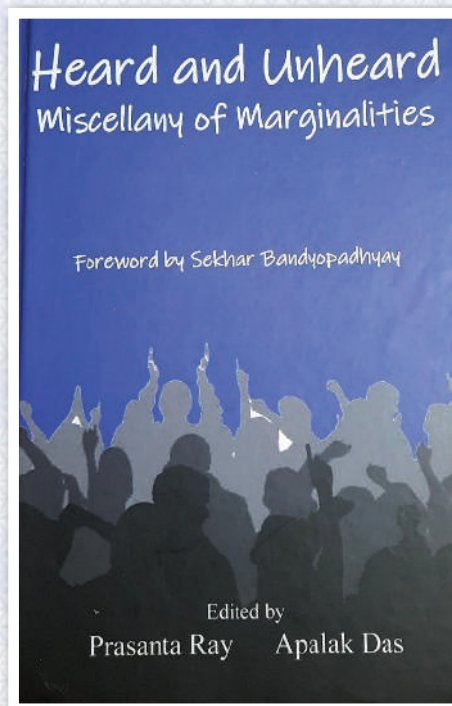
Title of the chapter:

Margins Within Margins: A Bestial Chaos of Choice, Power and Identity in Aravind Adiga's Last Man in Tower'

Abstract

Marginality demands a crucial consideration in the discourse on power and identity. Power equations often thrive in terms of 'centre' and 'periphery (ies)'. Margins are volatile. They often spill beyond the simplistic binary vis a vis the 'centre.' Margins defy homogeneity within. Within the space of marginality, newer centres and margins keep on evolving. Units within the marginal space typically exhibit a drive to gravitate towards the centre; sometimes through resistance of the status quo, at other times, through imitation of and conformity to the dominant entity (ies). Hereby, the socio- moral praxis in each marginal space can potentially pit the collective against the less pliable and nonconforming individual units, leading to a crisis of choice and identity. This research paper, based on Aravind Adiga's novel Last Man in Tower (2011), proposes to examine marginality and its inherent conflicts with reference to money and class in the context of the contemporary Indian cityscape. Last Man in Tower explores how a residential complex in Mumbai, on the throes of a real- estate revamp, becomes a site of negotiating social and cultural margins. The residents constitute a marginalized group eager to levitate towards a 'centre' embodied and publicized by the real-estate developer Dharmen Shah. This marginalized group lays out its own peripheries in which Yogesh Murthy 'Masterji' straddles as a dissenter. In forcing a consent out of him, the collective encroaches upon his freedom of choice and agency, thereby isolating him, discrediting his individuality, and eventually resorting to murder and posthumous slander.

Keywords: *marginality, identity, power, collective, individual.*



Book Chapter- 02

ISBN no.: 978-93-6095-137-5

Published by: Authorspress, New Delhi

Year: 2024

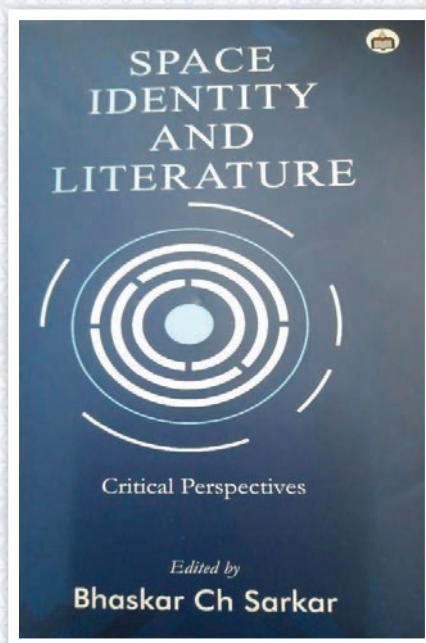
Title of the Chapter:

'Lest we forget, lest we do not: Identity and the Mnemonic Space in Michael Ondaatje's The English Patient and Anil's Ghost'

Abstract

Spatial Studies has emerged as an interdisciplinary site for the confluence of culture and identity. In the words of Jurij Lotman and Boris Uspenskij, culture is "the memory of a society that is not genetically transmitted." Memory can be conceived of as a site of intersections of experienced and imagined space. Theorists like Foucault, Lefebvre, Soja, and Westphal, along with many others, have probed into the heterogeneity, linkages, and contradictions across various dimensions of space. Space is interlinked with time as well; this affinity enhances the significance of delving deep into the significance of the mnemonic space. From individual memory to collective, and cultural, memory, one may trace the indelible connections across memory, culture and identity. An exploration of memory contains in itself the element of forgetting as well. Luisa Passerini proposes that there is "no work of memory" without a corresponding "work of forgetting". Forgetting, in both active and passive variations, remains a key catalyst in negotiations and transformations of identity at various levels. This research paper shall examine the multifarious implications of forgetting in the dynamics of identity across the mnemonic space as seen in two of Michael Ondaatje's novels- The English Patient (1992) and Anil's Ghost (2000). In The English Patient, Ondaatje critiques the manifestations of the act of forgetting on part of the eponymous character, whose loss of memory follows physiological trauma and he seems to complicate and interrogate identity in its discernible formations and structures. The narrative also traces other characters' tryst with memories and affiliations through the act of forgetting. Anil's Ghost etches out the protagonist's attempts to shift out of the 'given' facets of identity that are rooted in gender, family, and ethnicity, through a willful 'forgetting' of the past and replacing it with new memories that sustain her manufactured hybrid identity. On a wider canvas, this narrative explores the machinations of forgetting in the context of collective memory and identity. It sifts through the ravages of Civil War in Sri Lanka and chases forgetting as a political tactic to mold institutionalized versions of culture and identity. In The English Patient, the frame of reference is still wider as Ondaatje interrogates 'forgetting' in the power equations of the post Second World War world, where colonial and Eurocentric forces control and manipulate the narratives of memory and identity.

Keywords: *space, memory, forgetting, identity, collective memory.*



Papers presented:

- In International Conference, Indian Literatures And Cultures: New Theories And Reflections, 11-12 September, 2024, on 'One Versus Many: A Chronotopic View On Coloniality And Identity As Seen In Ramapada Chowdhury's "India" (Original "Bharatbarsha") And Aravind Adiga's "Last Man In Tower"'
- In UGC Stride (Component I) Sponsored National Seminar, Mapping the Transition in Jharkhand's Tribal Culture, Language, and Literature: Impact of Popular Culture on Folk Culture, 12-13 December 2022, on 'New Millennium, Old Conundrum: Reflection Of Jharkhand's Trauma In Kandsa Sowvendra Shekhar's "The Adivasi Will Not Dance"'
- Paper presented in National Seminar on Eco- Criticism, 26- 27 August 2022, organized by Department of English, Ranchi Women's College, Ranchi. Title of the paper- 'Problematizing Female Physicality: An Ecofeminist Reading of Mahasweta Devi's "Breast- Giver" '.

Name of the Faculty/Researcher- Dr. Anupama Bhargava

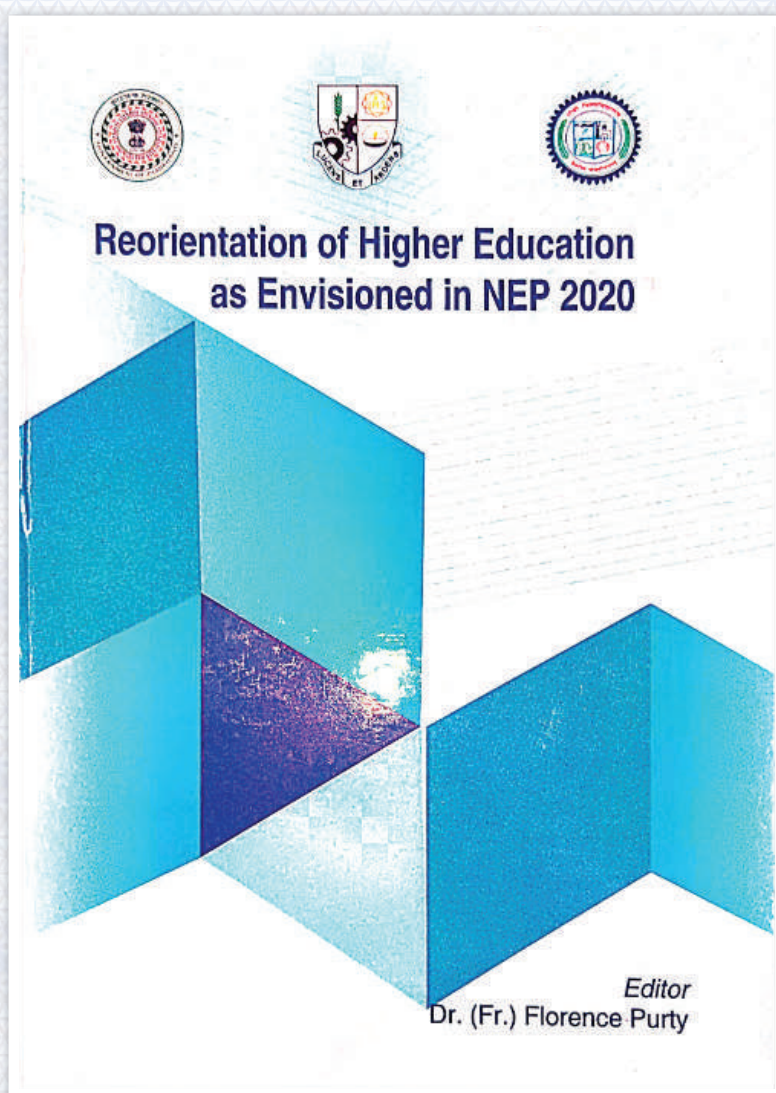
Dept. of Education

Email- anupama1229@yahoo.co.in



Book Chapter in- Reorientation of Higher Education as Envisioned in NEP 2020, ISBN- 978-93-85408-41-0; Published in May 2024, Publisher- Xavier Publication, Ranchi

Book Chapter- mentoring teachers for effective pedagogical practices and Its challenges in India



Name of the Faculty/Researcher- Dr. Nandita Pandey

Dept. of Education

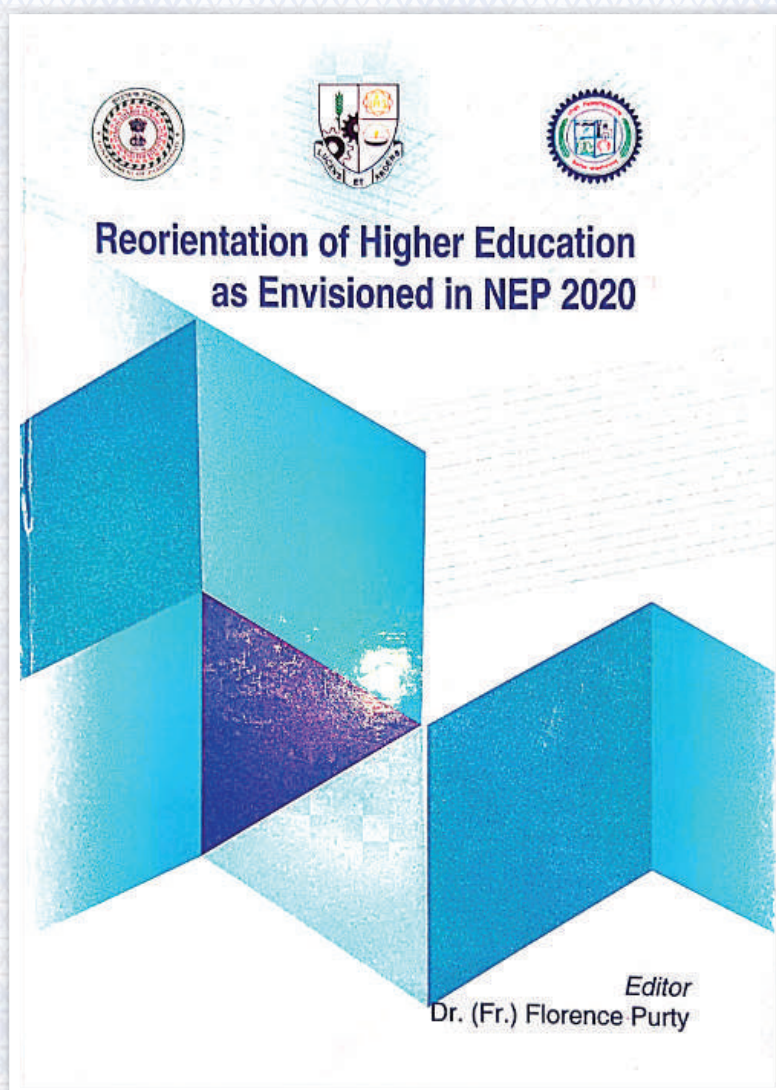
Email- nandita.das0209@gmail.com



Supervision of a short term Research project titled “Exploring the Role and Impact of project work in shaping the skills of secondary school students in Ranchi district” undertaken by Ms. Sonali Dipti Mary Minz, Faculty, DIET, Ratu, Ranchi (14/08/25)

Book Chapter in- Reorientation of Higher Education as Envisioned in NEP 2020, ISBN- 978-93-85408-41-0; Published in May 2024, Publisher- Xavier Publication, Ranchi

Book Chapter- mentoring teachers for effective pedagogical practices and Its challenges in India



Name of the Faculty/Researcher- Fr. Dr. Florence Purty, S.J.

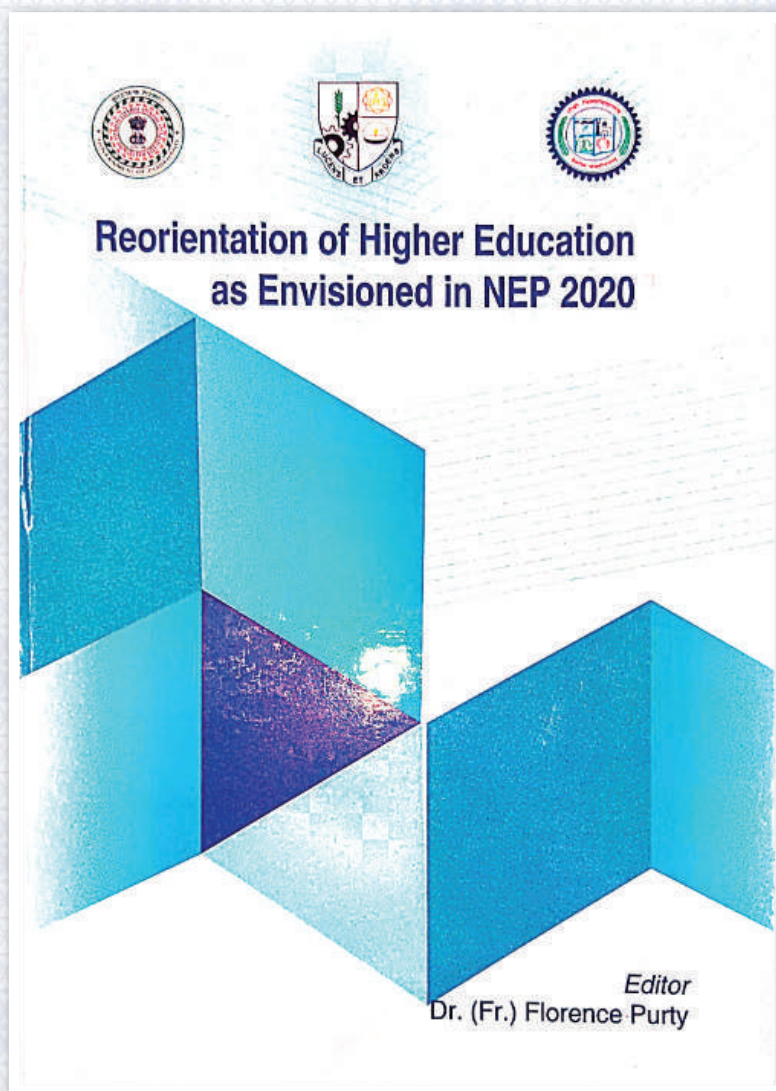
Dept. of Education

Email- florencepurty45@gmail.com



Book Edited- Reorientation of Higher Education as Envisioned in NEP 2020, ISBN- 978-93-85408-41-0; Published in May 2024, Publisher- Xavier Publication, Ranchi

Book Chapter- Holistic and multi- disciplinary education for overall development of students



Name of the Faculty/Researcher- Shri Ram Murmu

Dept. of Education

Email: rammurmusxc@gmail.com



No of Research Papers- 2

- 1) Published an article on “A Comparative Study of Aggression between Tribal and Non-Tribal Athletes in Ranchi District”, in the Resonance, National Journal of Value Education, a Peer Reviewed Referred Journal, Vol. 13.1, ISSN: 2320-7116, Jan 2025

Research Article - 01

A Comparative Study on Aggression between Tribal and Non-Tribal Athletes in Ranchi District

Ram Murmu^{1,2,a)}, Dr. Aman Verma¹

1. Dept. of Physical Education, Radha Govind University, Ramgarh, Jharkhand, India
2. St. Xavier's College, Ranchi, Jharkhand, India

Corresponding Author email: a)rammurmusxc@gmail.com

Abstract

The goal of sports psychology is to enhance athletes' performance in a contest by studying human behaviour during training and competition. There are various types of psychological variables in sports psychology such as aggression, anxiety, stress, motivation etc. of which aggression holds prominence in all events in which athletes often get physically involved. Aggression is defined as having the intent to damage or injure another participant who tends to avoid receiving such treatment. Aggression is a characteristic that can have a number of positive and negative effects on athletes' performance. It is a consequence of aggressive and angry behaviour.

This study compares the psychological variable, i.e., aggression, among tribal and non-tribal athletes in Ranchi District. A sample of 120 respondents was chosen from participants who were categorised as tribal (N = 60) and non-tribal (N = 60). They were further equally divided into two groups (Boys and Girls). The age range of the subjects was 14–25 years. The Buss and Perry Aggression Questionnaire (1992) was used to measure the “aggression”. It comprised twenty-nine questions that assessed four different attributes: anger, hostility, verbal aggression, and physical aggression. The degree of aggression among tribal and non-tribal athletes was compared using an independent/unbiased sample “t” test. At a confidence level of 0.05, the significance level for testing the hypothesis was established. The findings indicate that there was no significant difference in the aggression level among tribal and non-tribal athletes.

Keywords: *Psychological, Aggression, Tribal, Non-Tribal.*

Research Article-02

Published a paper titled “A Comparative study on Sports Competition Anxiety between Tribal and Non-Tribal Athletes of Ranchi District”, in the peer reviewed International Journal, International Journal for Social Development, Volume 13, Issue 1, (January-March, 2025), ISSN No. 2320-9283.

A comparative study on sports competition anxiety between tribal and non- tribal athletes of Ranchi district

Ram Murmu ^{1,2, a)} , Dr. Aman Verma ¹

¹ Dept. of Physical Education, Radha Govind University, Ramgarh, Jharkhand, India

² St. Xavier's College, Ranchi, Jharkhand, India

Corresponding Author email: a) rammurmusc@gmail.com

Abstract

Anxiety is a common psychological factor influencing athletes' performance, and it is pertinent to explore how it varies among different groups. The present study is focused on examining and contrasting the Ranchi district's tribal and non-tribal athletes' levels of anxiety related to sporting competitions. A group of 120 athletes, 60 tribal and 60 non-tribal, aged between 14 and 25, from various sports academies in the Ranchi District was selected as subjects. For this study, a sports competition anxiety test (SCAT, Martens et al., 1990) questionnaire was used to measure sports competition anxiety, consisting fifteen questions - five fakes, eight positives, and two negatives. The degree of anxiety related to sports competition was analyzed and compared between Tribal and Non-tribal athletes of Ranchi district using descriptive statistics (mean, standard deviation) and an independent t-test. Statistical Package for Social Science (SPSS) version 27.0 was used to statistically analyze the data that was collected after the questionnaires were scored. The significance level was set at 0.05. The results suggest that the anxiety levels of the athletes in the Ranchi district significantly varied between tribal and non-tribal athletes.

Keywords: *Competition, Anxiety, Athletes, Tribal, Non-tribal.*

Name of Faculty Member-Dr. Vikram Bahadur Nag

Department of Education

Email- vikramnag7878@gmail.com



Book Chapter-1

Name of the Author: Dr. Vikram Bahadur Nag

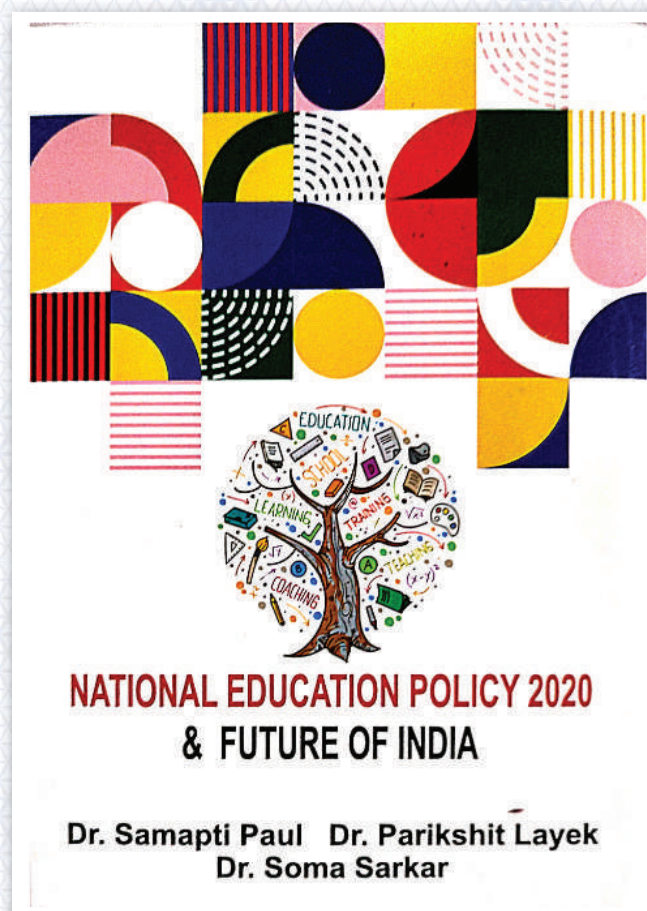
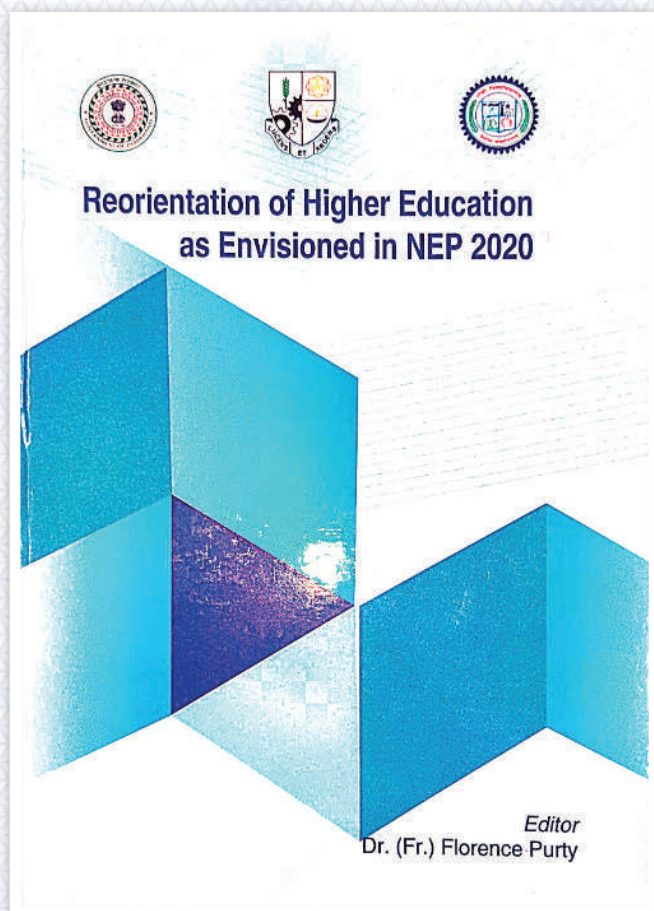
Title of the Chapter: Inclusive Education and Its Impact: A Brief Review

Title of the Book: National Education Policy 2020 & Future of India

ISBN: 978-93-6076-128-8, **Published By:** JTS Publications, Delhi, Year of Publication: 2023

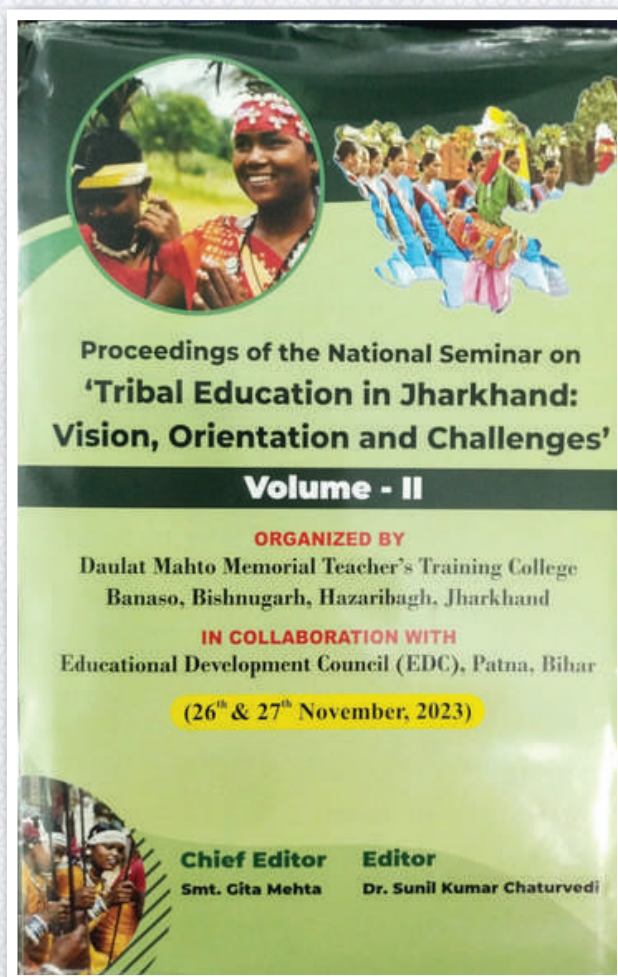
Book Chapter-2

Reorientation of Higher Education as Envisioned in NEP 2020 Chapter – Strategy to Face the Challenges in Implementing NEP 2020 Guidelines in Higher Education, ISBN: 978-93-85408-41-0, Published by Xavier Publication Ranchi, May 2024.



Book Chapter-3

Edited Book – Tribal Education in Jharkhand: Vision, Orientation & Challenges, Chapter – Educating Tribal Children – Policy Concern and Challenges, published by Kumud Publications, New Delhi, ISBN: 978-93-92023-94-1, 2024.

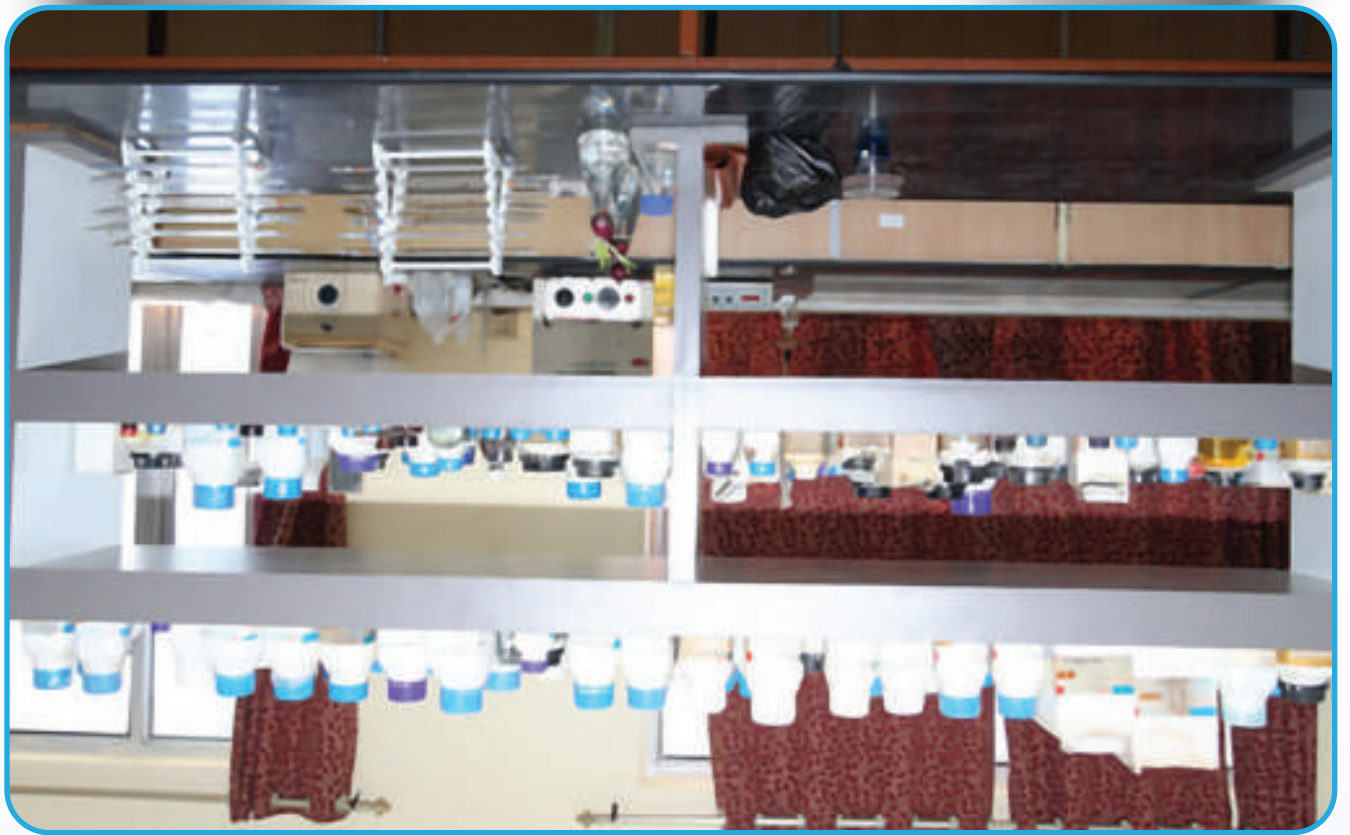


- 1) Presented paper in Two Days International Seminar on NEP 2020: Integrating Holistic & Multidisciplinary Education for Enhancing Human Capacities, organized by IQAC, Ursuline Women's Teachers Training College, Lohardaga, on dated 13th – 14th December. 2024. Topic Entitled "National Education Policy 2020 and Holistic Development in Education".
- 2) Presented paper in Two Days National Seminar on NEP 2020 & Future of India, Sponsored by ICSSR, New Delhi. Organized by IQAC, Sri Ramkrishna Sarada Ashrama Teacher's Training College, Hazaribag on dated 18th – 19th December. 2023. Topic Entitled "Inclusive Education and its Impact: A Brief Review".
- 3) Presented paper in National Seminar on 'Tribal Education in Jharkhand: Vision, orientation and Challenges' organized by Daulat Mahto Memorial Teacher's Training College, Hazaribagh, dated 26th – 27th November 2023, presentation on topic "Educating Tribal Children at different level Policy concerns and Challenges".











J01834_25_26 Kailash Paper, Ranchi • 1800 889 4101



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DR. CAMIL BULCKE PATH, PURULIA ROAD, RANCHI - 834 001, JHARKHAND

E-Mail: sxprincipal@gmail.com | Web: www.sxcran.org | www.sxcran.ac.in